SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

EXPLOSIONS IN COAL MINES, AND THE EMPLOYERS' LIABILITY BILL.

The following letter has been addressed by Mr. Ellis Lever to the Right Honourable Sir William Vernon Harcourt, Q.C., M.P., Her Majesty's Principal Secretary of State for the Home Department:—

SIR,—I had the honour of a short interview with you at Derby on the 22nd inst, which you will, perhaps, remember, when I spoke to you on the subject of explosions in mines—more especially those caused by the practice of blasting in fiery mines, a practice which, in the interest of all concerned, ought to cease, but which never will cease, until it is altogether prohibited by law. The use of gunpowder in mines is always attended with danger, and the danger increases in proportion as the mine is loaded with gases of an explosive nature. The use of naked lights, dangerous as these are in many mines, is not fraught with such serious consequences as blasting with gunpowder, because in the latter case all the elements of combustion are present in full force and in their worst form. As above stated, the practice will never cease unless a prohibitory law is passed rendering it illegal, and, if need be, criminal. It is not the owners only who are to blame in this matter; the men are equally guilty. In some places where the owners are favourable to the discontinuance of powder the working miners object to its disuse; not so much because of any recklessness on their part, but because they have been accustomed to use it. So wedded are both parties to old habits that they ignore the danger, and assume that the use of powder is really a necessity, and, indeed, that it cannot be dispensed with. That this is not so is well known to those who are at all acquainted with the working of mines; it is rather the outcome of prejudice than an essential condition of mining, as the several Mine Inspectors well know, and as the representatives of the workmen have over and over again declared.

Mr. Plimsoll once stated that men of science must devise some other and safer plan. Other and safer plans have been devised, but they are, and will remain, inoperative until the whole practice is declared illegal. Mr. Thomas Wynne has said that the inventions already known cannot take effect—so powerful is the force of habit—until the use of gunpowder is prohibited by Act of Parliament. The discoveries and inventions of scientific men will then have fair play, and stand some chance of being adopted. The work of the miners is hazardous enough in all conscience under the very best conditions as to safety, and it ought not to be made more hazardous by the use of anything likely to augment its risks. That the use of gunpowder does this is unquestionable. During the year 1878 no fewer than 586 lives were sacrificed by explosions alone, besides the vast number of men who were more or less injured. This is altogether exclusive of other accidents in and about mines from totally different causes. This shows that the matter is sufficiently serious to call for the intervention of Parliament.

Doubtless the Employers' Liability Bill will have some effect in causing more attention to be paid to the causes of accidents, and will probably lead to extra care being taken to avert them. But even this, useful as it is, will have to be supplemented by further legislation in the direction indicated, or it will fail in its highest object—the saving of human life. The object here sought is not to increase the liabilities of employers, but to diminish them, as greater responsibilities will assuredly do. The extra cost incurred by taking the necessary steps for the prevention of accidents—or rather explosions, for any disaster that can be foreseen and prevented can scarcely be called an "accident"—is more than recouped in the long run by the saving effected; and at the same time greater safety is secured. I take the liberty of enclosing for reference a report of the debate which took place in the House of Commons, with which doubtless you are quite familiar, some passages of which I have marked with the view of economising your time, and to which I beg to call your special attention. Since that date several other explosions have taken place, notably at Lycett, when between 60 and 70 persons were killed; and only last week at Kiveton Park, when several lost their lives—both of which were directly caused by gunpowder blasting.

I learn by a statement made in the House last night by Mr. A. Peel, that a meeting of Mines' Inspectors will shortly take place, at which possibly the foregoing and some other matters may be discussed. Will you, therefore, permit me to offer a further suggestion beyond the one already alluded to, but closely connected with it. According to the Inspectors' reports considerably over 1000 lives are sacrificed every year by the deplorable disasters in and about mines. Above and beyond this something like 20,000 persons are injured every year in mining operations. So vast is this number that, as it appears to me, no adequate provision can be made for the persons injured and those dependent on them, except by a small fixed annual rate being imposed on the tonnage of coal raised or sold. That this rate need not be high is proved by the following figures:—The total quantity raised is somewhat about 130,000,000 tons annually; 1d. per ton would realise 500,000*l*. But if the rate was fixed at one halfpenny only this would yield 250,000*l*. a year—an amount less by 350,000*l*. than is produced by the coal dues paid by the inhabitants of London to the Corporation of that city. This would amply suffice for all contingencies, without having recourse to special funds at every great disaster; a mode of relief not at all satisfactory, inasmuch as when from 70 or 100 or more are sacrificed by one catastrophe their families are well cared for, whereas hundreds of other families equally deserving are every year deprived of their bread winners, and at the same time are afforded no adequate relief. If during your tenure of office as Secretary of State for the Home Department some efficient measure could be devised and carried dealing with these and other matters affecting the welfare of the mining population of this country, in continuation, as it were, of the beneficent legislation in connection with the same subject introduced by Lord Aberdare, your reign at the Home Office would be signalised by great and noble work, and your name associated with good deeds, and be handed down to posterity as the friend of the miner.

Piccadilly, Manchester, May 26. ELLIS LEVER.

In acknowledging the receipt of this communication, Mr. Liddell wrote—"With reference to your letter of May 26, and enclosure, on the subject of Explosions in Mines, I am directed by the Secretary of State to acquaint you that he is painfully alive to the importance of the question to which your letter refers, and that the subject is engaging his anxious attention."

HYDRAULIC ENGINES.

SIR,—There are many inventors who seem to have difficulty in comprehending that if their inventions worked they would have entitled themselves to claim the discovery of perpetual motion—and, conversly they cannot see that, because their proposition involves that claim, their invention is necessarily worthless. Among the latest of these deluded individuals who have wasted their money to patent their ill-arranged ideas is Mr. James Morton, of Philadelphia, who supposes that by using an engine of his design, and which would consume about 1½-horse power to work it, he can make the 1-horse engine that is to operate it do tenfold work. He declares that his object is to provide a simple, inexpensive, and effective arrangement for converting into mechanical power and motion the pressure of a column of water.

The machine consists of a cylinder, supported in a frame, and containing a piston. Secured to the piston in the usual manner is the piston-rod that projects through the stuffing-box, and connects with the crank-rod by means of the cross-head that moves in the guides, the crank-rod being connected with the crank of the driving-wheel. From the upper water reservoir above the delivery-pipe conducts water to the cylinder, from which it is expelled through the discharge pipe into the lower reservoir. The supply and discharge ports are regulated by a slide-valve, which is moved by the valve-rods and connections in the ordinary manner. Assuming the upper reservoir to be 50 ft above the cylinder, and the delivery-pipe to be 2½ in. in diameter, the cylinder to be 12 in. in diameter, and 12 in. long, and the stroke 6 in., or half the length of the cylinder it is found, he calculates, that the pressure upon the piston will be about 2452 lbs., or nearly 22 lbs. per square inch, provided the cylinder above the piston be filled with water, which at 150 strokes per minute will exert about 10-horse power. A hydraulic pump placed at the level of the bed-plate of the machine will, he fondly thinks, raise the water again from the lower to the upper resorvoir as fast as it is discharged from the cylinder, with an expenditure according to his calculation, if he has made any, of about 1-horse power; hence he concludes that by his non-mechanical arrangement the downward pressure of the water from the upper resorvoir upon the piston will develope a much greater power than is required to elevate it again, and that this excess, whatever it may be over the amount absorbed by the friction and weight of the moving parts of the mechanism, can be made available for other work. The water being in the upper reservoir flows down the pipe into the upper part of the cylinder, and by its pressure forces the piston down, while at the same time the valve is made to close the upper exhaust and lower supply ports; on the return stroke the valve closes the upper supply and lower exhaust ports, and opens the others, operating like other slide-valves. From the driving pulley a belt is passed around the pulley of the hydraulic pump, which is to draw the water from the lower resorvoir, and force it through the upflow pipe into the higher reservoir, and he proposes to apply the rest of the power, which he erroneously supposes will be developed, to any other purpose for which it may be desired.

Now, except in unimportant details, Mr. Morton's suggestion is centuries old, and even the usual complaint against inventions must be made to read—what is new is not useful, and what is useful has no representative in the machine. The reason is obvious. Assume the upper resrevoir to contain 100 gallons or 1000 lbs. of water, and the lower reservoir 100 gallons or 1000 lbs., and it will be admitted that the fall of the whole upper reservoirful would be necessary to force up the lower reservoirful, and that then, if the two reservoirs had been so connected as to form a U tube, the upper reservoir opening into the upper part of the U, and the lower reservoir into the lowest point of the U, the two masses of water would combine, and stand at one uniform level; this is the case in which the falling water appears to have most effect in raising the lower mass, as the U tube being open to both bodies of water the friction is reduced to the minimum, and the water has no work to do, but Mr. Morton supposes will overcome the friction and work in his engine and in the pump, and that the balance remaining will be equal to the total—or, to put it in figures, that assuming that the engine and pump can be worked by the fall of 250 lbs. of water, then the remaining 750 lbs. will lift 1000 lbs. to the height from which it came; that is, that if we have bodies weighing 750 lbs. in one scale-pan of a true balance, and 1000 lbs. in the other, the weight of the two will be equal, which is absurd, and proves the fallacy of his invention.

Chancery-lane, June 8. AGENT.

BOILER EXPLOSIONS.

SIR,—In noticing last week the disastrous boiler explosion which occurred at Birchills-hall Ironworks, on May 15 last, it should have been stated that the exploded Rastrick boiler had four cross tubes within it, each 2 ft. in diameter, uniting in the centre tube, 4 ft. 1 in. in diameter and 11 ft. in height. The boiler being upright (26½ ft. in height) was surrounded to about half its height by a brick flue, the bricks for the formation of this were thrown with destructive violence all over the works. The boiler was heated by the waste gases from three puddling furnaces and one balling furnace. The external flue being divided into four compartments; into each of these the waste heat from one furnace was received, passing over the bottom and breast of the shell to the top of the compartment, and then into the branch tube, the heat from the several compartments uniting through the four cross tubes in the centre tube, from whence it passed to the chimney. There were no water gauges on this group of boilers, the boiler No. 4, which exploded, being provided with three gauge cocks. A pressure gauge indicating 29 lbs. or 30 lbs., when the actual pressure was 40 lbs., per square inch was placed in the engine-room. At the adjourned enquiry, held at Walsall on May 31 last, Mr. E. B. Marten presented a report on the explosion. Referring to boilers of the Rastrick type, he said his attention had been directed greatly to boilers of this class. An explosion of one at Millfield Ironworks in 1862, attended with the loss of 29 lives and injuries to 12 others, had led to the formation of the Midland Steam Boiler Insurance Company. Another Rastrick boiler explosion occurred at Chatterley Ironworks, June 26, 1877, whereby 11 persons were killed and 24 injured.

Reverting to the boiler at Birchills-hall Ironworks, Mr. Marten said it had been much repaired; there were about 11 patches in the plates round the branch tubes. The immediate cause of the explosion seems to have been the weakening of the boiler by injudicious over-repair, and the first rupture seems to have taken place at the part where the heat from the ball furnace impinged upon it; a seam also occurred there, and there has been much leakage, as is shown by the corrosion of the plates close to the seam. Repeated repairing had made the seam insecure; the object with those in charge of the boiler appears to have been to stop the leaking, without noting the weakening of the seam and the distress in the plate caused by so much caulking. The seam became at last too weak to bear the pressure, which might be 43 lbs. of steam, before the safety-valve would relieve it, to which should be added the pressure of 12 ft. of water above it, equal to 5 lbs. per square inch.

The fittings of the boiler consisted of a steam stop-valve, double branched, gauge cocks, float, feed valve, blow-off valve, and one safety valve, 5½ in. diameter, loaded as near as could be ascertained to 43 lbs.

The use of waste heat for generating steam is not confined to ironworks; waste heat is now largely utilised at collieries in heating boilers with the gases escaping from the coke ovens. At modern blast-furnace works the gases from the furnaces generally raise the whole of the steam required for the blast and other engines.

The Rastrick type of boiler is still in existence, but the sooner it disappears the better for the safety of our ironworkers. A boiler worked in connection with four puddling furnaces is placed in a position to be sorely distressed—at one time it is subject to the fiercest heat from the furnace; at another, when the charge has been drawn and the furnace is being fettled, the air which finds its way to the flue of the boiler will be comparatively cool. The damage to the Rastrick boiler is always greatest at the places where the flame first strikes the shell, and it is there repairs are most frequently needed. The bottom plates are also much subject to corrosion where they rest on the brickwork, owing to the leakage they are subject to, and there also frequent repairs are needed. The vertical furnace boiler, connected to one furnace, is much in use at the ironworks about Middlesborough. It forms the chimney for the furnace. This vertical boiler is from 40 ft. to 50 ft. high, about 5 ft. in diameter, with a central tube, in which several cross tubes are fitted. Through this central tube the waste heat from one furnace passes, and as much steam is generated by these boilers collectively as is sufficient for the mill engines.

The establishment of the National Boiler Insurance Company dates from 1864, and has now obtained a large share of public support both as to inspection and insurance of boilers. Mr. H. Hiller is the chief engineer. Those insuring boilers with this company are entitled to have their engines indicated and inspected. Under their care the working of many engines has been improved; in some cases the consumption of steam has been reduced to one-half of what it was prior to the improvement. With respect to boilers, they have about 5000 under insurance; during the past year the number inspected and insured has increased. This company impress upon the owners of boilers the importance of co-operation with them in the matter of having boilers prepared when the inspectors come to make their thorough examination, so that the object the company have in view—the prevention of explosions—may be provided for as far as possible. Some engineers are unacquainted with the proper modes of setting boilers, and of their fitting up. The essential conditions for the safe working of boilers are—

1.—That external flues for large boilers be large enough for a man to pass through; for small boilers large openings fitted with iron doors, are required at each end of the flue, so that complete inspection can be made.

2.—Brickwork in contact with plates should not exceed 4½ inches.

3.—Boilers with brick flues should rest on fire-clay blocks, instead of broad mid-feathers, or side walls of brick-work.

4.—Boilers should not be placed in confined or damp situations; if placed below the ground, no moisture should be permitted to touch them.

5.—Owners should use every effort to have the boilers cleaned and prepared for thorough inspection. However careful and skilful an inspector may be, neglect of this precaution may lead to defects not being found out, the detection of these being essential to their safety. Many explosions have happened through a deficient supply of water; in many instances damage has been prevented by the use of double-cone fusible plugs; in others, through the use of low water safety valves or alarm whistles. These adjuncts, however, should not be used without giving them regular attention. Fusible plugs cannot be applied, to be reliable, to externally fixed boilers: these should have low water valves or efficient alarm whistles. In the past year a large number of furnace tubes were distorted or collapsed through deficiency of water, in some boilers the collapse was serious and explosion was narrowly averted. Accidents such as these are frequently due to the neglect of attendants, from the blow-out taps being partially open, or the feed of water not kept up; omitting a regular testing of the water-gauges, more especially after a stoppage has taken place. In some cases the damage has arisen from the feed valves being defective, or the injudicious arrangement of the feed discharge pipes, or from the want of a good feed back pressure valve. Other dangers are imminent in regard to the deposit from bad water on the furnace tubes and plates; from defective and injudicious repairs on the plates; defective construction, and defective setting of boilers. On all these points the advice of an insurance company should be most valuable, and with the co-operation of boiler owners should be a safeguard against explosions.

M. E.

LEAD MINING—DURHAM DISTRICT.

SIR,—The lead strata of this district has for centuries been the scene of very profitable lead mining operations—and why? Because some of the richest mines in the world are located here. Unlike many other districts the index of success is of the most pronounced and unmistakeable character. Some of the measures which constitute the formation of the country are generally found to be particularly prolific in the production of lead ore, more especially when intersected by strong, masterly, and well defined lodes. Consequently when a mine is being opened up the lodes are at once pursued and operated on with a view to reach these particular measures, where the lodes become as a rule very rich, and where the whole of the lode stuff will pay well for bringing to surface and separating the ore from its gangue, which gangue is generally composed of calc spar and fluate of lime. White iron also occasionally enters into its composition, but on the whole the lead ore of this district is very easily and cheaply dressed.

The Northern Lead Mining Company, recently formed, has acquired a very valuable mining sett in this district, and in the centre of some of the most celebrated mines in the kingdom; and bearing in mind the characteristics of the rich mines which surround their property, and that it is an attested fact that, like the neighbouring mines, the following lead measures, locally called sills, are fully developed in their mines, and intersected by three of the most powerful and masterly lodes in this part of the country, the future of the company looks bright. The sills referred to are:—The Great Whin Sill, Tyne Bottom Limestone, Scar Limestone, Five Yard Limestone, Nattross Gill Hazel, Four Fathom Lime, Quarry Hazel, Tuft, Great Limestone, the Low and High Coal Sills, the Little Lime Sill, &c. The mines, moreover, are in great part developed, and large reserves of ore already laid open, so that it is believed in the neighbourhood that a profitable and lasting future must attend the Northern Lead Mining Company. Labour is very cheap and abundant, and the workmen as a rule are honest, sober, and well-conducted men. Mining under such favourable conditions must redound to the good of all concerned, and the company can most likely compete successfully with any lead producers in the kingdom. JUSTICIA.

Darlington, June 7.

TREATMENT OF POOR ZINC ORES.

SIR,—It has now become so necessary to practise economy in all departments, and to utilise every ounce of mineral raised in order to secure the maximum of profit, that miners have learned to manipulate ores of so low a produce that but a few years since they would assuredly have been thrown upon the waste heap; yet, whilst a great deal of attention has been given to poor tin ores and poor copper ores, because their metals are of greater value, poor lead ores and poor zinc ores have been comparatively neglected; the latter, however, can now be turned to account. It is well known that the present method of treating zinc ores in muffle furnaces, necessitates so large a consumption of fuel and of refractory products for the distilling vessels, that unless the zinc ore be of comparatively large produce the process becomes unremunerative. To meet this difficulty, a Prussian metallurgist, Mr. Rudolf Wiester, of Kattowitz, has arranged a process which requires less fuel, whilst the decrease in the consumption of fireclay distilling vessels renders the treatment more advantageous generally, another great recommendation being that a much larger proportion of the zinc contained in the ore is extracted, so that poor zinc ores the treatment of which by the methods hitherto in use is not remunerative can be made to yield profit.

The zinc ores, whether calamine, hydrosilicate of zinc, franklinite, or roasted blende, are mixed with the requisite quantity of reducing coal or coke. The mixture is spread upon the sole or hearth of an English reverberatory furnace slightly lengthened, and submitted to the action of a high temperature pushed to a white red heat until the charge nearly ceases to disengage zinc vapours, and that the residue is entirely freed from zinc, or at least only retains a relatively very small quantity. The zinc vapours which are disengaged in the furnace burn immediately as they become disengaged from the ore by contact with atmospheric air, becoming re-transformed into oxide, and the zinc flame with its characteristic colouration which appears during the operation serves to mark its progress, and particularly to indicate the moment of its completion. The oxide of zinc which is formed issues with the flame by the inclined flue, and is led by the flue or channel joined to the incline into condensation chambers of sufficient capacity to lessen the speed of the gases which are disengaging, so that the oxide of zinc has the time and the opportunity to deposit upon the bottom of the chambers and to collect there. For the better emptying of the chambers it is well to form their bottom of an arrangement of hoppers, by the opening of which the collected oxide may be removed. The oxide thus obtained is transformed into metallic zinc by the known methods in crucible furnaces.

In practice the ordinary reverberatory furnace is slightly lengthened, and is so constructed that the flame may be utilised to the utmost; the furnace, moreover, is fed by current of air forced beneath the grate. The oxide of zinc which forms as above set forth issues from this furnace mixed with the other products of combustion by an inclined flue and goes into a chamber which serves as a refrigerator. In the arrangement chosen for example this chamber is a wooden box or chest, the inlet side of which is constructed of masonry because of the high temperature of the gases which enter it. The cover or lid of this chest is formed of an iron bowl or basin with perforated bottom, into which water is conducted, to run from thence like rain through the holes in the bottom and cool the gases which pass through the chest. The water which issues from the chest may, when it carries with it a rather large quantity of oxide of zinc, be again collected in a clarifying vessel, and the zinciferous mud or matter deposited in this latter may be collected to be submitted to further treatment. The gases mixed with oxide of zinc issue from this refrigerator and go to the condensing chamber, and which is formed of suspended cloth. The bottom of this chamber is composed of cloth sacks or bags in the form of hoppers, tin which the oxide of zinc which deposits is collected. To empty the chamber it is only necessary to open these sacks or bags. The capacity of this condensing chamber is calculated so that the speed of the gases which pass through it is sufficiently reduced to give the oxide of zinc time to precipitate. The construction of this chamber is in fact identical with that of the condensing chambers now in use in the manufacture of zinc white. further treatment and the

reduction of the oxide of zinc obtained takes place in the ordinary well-known manner. It will be evident that the arrangement chosen as example does not constitute the only way in which the apparatuses required for the operation may be constructed. The furnace as well as the refrigerator and the condensing chamber may all be otherwise constructed to answer the purpose to be attained, but this explanation, which the inventor will be glad to make more complete to those applying to him, will suffice to elucidate the character of the process as a whole. DEUTZER.

A NARROW GAUGE RAILWAY FOR THE CARDIGANSHIRE HILLS.

SIR,—There is a looking for improvement in business prevailing everywhere at the present time, whether consequent on the quieting tone which the accession of the new Government may have given to the politics of the empire it matters not; the fact is noticeable that all branches are expecting a return of prosperity. Railways and tramways are about the first to give tokens of new life in connection with commercial circles; this is as it should be, because the improved means of conveyance instituted by railways has promoted the development of our industrial resources, and consequently added to our wealth more than any other power; and the extension of the iron road into places not hitherto enjoying it would certainly add a prosperous element to their general welfare. This is a fact patent to all the country. The writer was through Cardiganshire a few weeks ago, and he could not help noticing how properties, rich in minerals, and which might become productive, too, in fruits of the soil, lying between the Manchester and Milford and Mid-Wales lines of railway, land locked, as it were, and cramped by inadequate means of communication. The Manchester and Milford system, of which the line from Aberystwith to Carmarthen is reckoned a branch, is not completed, as there is still a gap left open between Llanidloes and the Devil's Bridge, and between the latter beautiful summer resort and Strata Florida station. If this "break" were accommodated then Manchester and Milford would be united by a railway route nearly straight, and passing through pleasant country all the way, and the traveller having to encounter but minimum delays in the journey.

An attempt was made to supply this "missing link" a few years ago, but it came to grief in the collapse of the period. The question may, however, be revived with advantage, and the attention of our Manchester and Milford friends is now called to the matter. Those who got discouraged by the heavy engineering expense which marked the former efforts in this direction, no less than by the draining of the resources on which the promotion of the scheme was then depending, need not keep back now on the score of the old grievance. The difficulties which were to be encountered in those days will not appear again, and if any should arise they will certainly be milder than those. It is proposed to introduce a 2-ft. gauge railway amongst the hills, as it will require no tunnelling nor any great engineering cost—a system, in fact, which will be found convenient, cheap in construction and maintenance, and safe, all of them important factors with a line of railway. This projected accommodation will give the necessary impulse, which is nearly always absent in isolated places, for the more active development of the resources around them—the impulse being the quick return of profits for the labour and money expended. Why is there so much diligence visible in the conduct of business in our large stores, in our manufacturing establishments, in our commercial houses? The answer is—because there is a certain remuneration at the end of it all. Remove the payment prize, reward, or whatever else it may be called, and those fabrics would fall. So in like manner let the investments of of debentures, the labour, care and attention of cattle breeders and farmers be allied with quick money returns, if it be but little, there will be no lack of spirit displayed in their enterprises. The suggested railway will supply the very want felt by all parties alike. It will benefit all and spur them to obtain greater results. What may be called the trunk lines of the district have been established already, and the advantages which accompany them must be carried into the interior valleys by the construction of branches in some way adapted to the character of the places and their requirements. If these things are left unprovided, then the main lines are performing only part of their mission, and the capability of the land is suppressed. Now, the latter loss will affect all the population alike, and doubtless there is no one who would willingly be a party to keep the country back, and hinder it competing in the markets of the world.

The proposed line will start from the field in front of Trawscoed Station, near the seat of the Earl of Lisburne, and keep to the back of Dolcelynen, then make a turn down to the Ystwith, and follow that river on the south bank past the flourishing Grogwinion Mine and onward till it comes to the celebrated Lisburne Mines, whose floors it will pass over, and pursue its course forward to Pontrhyd-y-groes, where there will be a station. Here the main route will make a bend almost due north in the direction of Llantrisant Valley, and lead up to the table land above to accommodate the Red Rock Mines. It may be well to remark in this place that the route keeps on the south bank of the Ystwith to avoid the cost of making a bridge over it. The Grogwinion Mine Company have already made a road for themselves to come to the highway, and the same may be allowed to remain. In connection with the Lisburne Mines it may be stated that the passage of the new route over its floors will enable them to get materials and ore up and down with less time and less expense than they are paying at present, and these are the advantages which it is sought to realise for traders by serving them close to their own doors. Coming back to the point at the Red Rock, the line will pursue its way till it comes to the north bank of the Rheidol, below the picturesque falls and beautifully wooded grounds belonging to Devils' Bridge, and here two diversions will be made, one starting at the point where the Rhyddnant brook flows into the Rheidol, and go on alongside that brook, and make a convenient turn to accommodate the Devils' Bridge Hotel with a first-class station, then pass on for a short distance for the purpose of taking supplies to Bodcoll Mine, Tygwyn, and others on those slopes. The other diversion will serve the Rheidol Valley westward. Devils' Bridge is famous for its natural charms, which are reckoned equal to the best resorts in the lake district in the loveliness of their summer grandeur, and is visited by thousands during the season. When statistics were taken some time ago it was estimated the proceeds from excursions alone to this place would be sufficient to meet the working expenses of a railway running between Devils' Bridge and the main lines; this was the result of the enquiry when the idea was for a line of the standard gauge. More favourable still will be the result with a narrow gauge, which will be unique in the moderate expense of maintenance. If large numbers can visit this lovely resort, notwithstanding the delay and inconvenience attending the journey to it in vehicles of all descriptions, some of them jolting and tossing their passengers in a very uncomfortable manner, one may venture to put down twice that number who would come by a line of rails, and thus by the same reasoning the proceeds would be adequate to maintain the working expenses on twice the length of road. Coming back again to the point where the line branches off to Devils' Bridge Hotel, the main route will follow the valley of the Rheidol northward, passing some good lead mines, and presently emerge in the third mile into the open plain at Ponterwyd, where it is proposed to place a station for the benefit of Cwmbryno, Powell Consolidated, Llywernog, and other mines in that locality. These mines have been carried on in the face of oppressive difficulties for many years, the chief of these being the want of greater facilities for the carriage of material and produce. The route leaves the Rheidol at Ponterwyd and strikes off north-east, keeping to the side of the high road, past Brynglas and other mines on the west, with Nant-y-Cria on the east, and makes off towards Steddfagerrig, where it will fall in with the bank of the Tarenig river, and follow it till the Wye is reached, then the line will make over that river and keep between it and the high road till it comes to Aberbidno brook, at which place it will strike across the main road and run up to the terminus at Llangurig. Thus the line will open up mineral properties, old and new, besides setting higher value upon agriculture. Benefits like these are at the basis of the structure, and would at any time supply ample motives for projecting the scheme, but these are not all the resources; in addition to them, other incentives no less powerful will start up in the unfolding of things that will naturally take place one after another consequent upon the advent of wider facilities, so that in reality one may venture to say that there is a paying traffic at hand waiting to be utilised, with the prospect of increasing results as the line becomes known. The total length on this main route between the two extreme ends is about 24 miles, which may be called line No. 1.

It is intended to feed this line by sending out branches into three valleys to receive the trade of the mines and farms, and to stimulate their further progress. The first of these branches, or railway No. 2, is intended to start near Dolpetid, and go down the valley of the Rheidol, along the north bank of the river, passing in its course the mines Tyn-y-Fron, Bwa-drain, Yellir-eirin, and Tyllwyd, besides others; leaving Tyllwyd on the right the route maintains its way westward till it comes to the river bend, where the line will make a north-west turn across the township road at Dolcamlyn, and from there go almost due north till it comes to Goginan-fawr, on the Afon-Melin-dwr, where it is proposed to terminate. The length of this branch is about five miles, and will have three stations in it, one at either end and another about the middle. The district is valuable for ore and agriculture, and the population is looking forward to an early date when their isolation will be substituted for easy interchange with the rest of the country. The next branch will start from line No. 1 at Pontrhydygroes (near the Lisburne mines), and go up the valley of the Ystwith, keeping on the south side of the river; and at the bridge near Nant Helig it is proposed to plant a station for Havod, the quiet and pleasant residence of Mr. Waddingham; this station will command Eglwysnewdd district and adjacent places, where there is a fair farming population. From this point the line will continue to follow the river and come to Pentre Brunant as the next halt, and this place it is intended to serve by means of a bridge over the river, and open a commodious entrance way into the village; the railway keeps to the described path for economic reasons which the friends at this place will be able to appreciate. From here the line will extend up the valley past West Cwmystwith, a little mine with remarkably good prospects, and on to the floors of South Ystwith, which is also a very valuable property with signs of great animation sustained by good points; the branch will cross the river at this place and make direct for the floors of the Old Cwmystwith Mine. It may be mentioned here that these last works have yielded immense riches in the past, and, judging by present appearances, are destined to hold their own for a long time to come. The mineral ground to the north within the compass of the existing works holds out encouraging prospects with fresh lodes. In fact it may be stated the whole stretch of land between these places and the north boundary is worthy of an energetic search. The ground bears a high mineral character, and the effort would have several chances of success. It is proposed to make the line of railway end for the present at the washing floors of the Old Cwmystwith mines. At a future day it may be taken forward past Tyllwydd House, where veins of lead ore have been discovered, and thence eastward to the property of Mr. Hampden Whalley, M.P., and of which Sir W, W. Wynn, Bart., is lord of the manor, where are new mines in progress of being opened under a London Syndicate with pretty good prospects.

It may be well to say these hints on the mines are made on the writer's own responsibility and knowledge of the capabilities of the points he is referring to, and which could not well be overlooked in a survey of what may be regarded the legitimate sources of traffic. The length of this branch, or line No. 3, is about five miles, and will be supported with briskness in passenger and other traffic—live stock, grain, coal, lime, timber, besides the constant trade of the mines. The third branch, or line No. 4, will start off No. 3 at a convenient point, and go up Nantgai Valley, scaling it in spiral form more or less, and land on the heights above in three miles or so, in order to accommodate two great properties, Esgair Mwyn and Esgairddu, which have been thrown back a good deal in former years through lack of access for the cheap transit of materials. The land which the proposed lines will chiefly go over belongs to Earl Lisburne and Mr. Waddingham, and it is hoped these gentlemen will countenance the proposal. The benefits that will accrue to the mines will be duly acknowledged, no doubt, by the respective companies giving their united support to the enterprise. Some of these works may, possibly, be under a temporary cloud, but the new lines, it is believed, will materially help in dispelling it. The monthly saving in the item of feightage alone will leave a margin that may raise a cheer. Nant-y-Cria Mine is reported to have the most abundant deposit of blende ore to be found in the district, but distance from market and bad roads have always kept it back; but this mine will have the chance to revive now, and give returns equal to its capability. Then, again, the agricultural and commercial interests may be depended on for their proper representation. It may be pointed out in this place, if the land and mineral owners—Earl Lisburne, Mr. Waddington, Mr. Pugh, M.P., and others—would give in their adherence the stability of the proposed lines would be safe. In conclusion, looking at the district with its extensive mines and broad acres, the through communication that will be established with the rest of the country, the remunerative traffic that is represented, and remembering the whole is left at present without accommodation suited to their requirements, then couple with these the Devil's Bridge attraction, and add thereto the cheapness of the proposed railway in construction and maintenance—in a word, with these things in favour it will be impossible to resist the conclusion that the conditions for complete success are inherent in the scheme, and that it will prove a prosperous undertaking. The question is now asked, will the district support the getting up of plans and sections to be submitted to Parliament, &c.?—*Chester, June* 7. J. HUMPHREYS.

COPPER DISCOVERIES IN WALES.

SIR,—In reading the communications of your North Wales Correspondent in last week's Journal I was pleased to find that gentleman is coming over to the opinion that copper may be found in Cardiganshire and Montgomeryshire. He states that the older rocks in the neighbourhood of the Cambrian Mines have an anti-inclinal position. Well, I suppose anti is a negative term, and means something that is the opposite or the contrary to something else existing, and all the rocks, old and new, if you like, in the immediate district of the Cambrian Mines do incline more or less. So they do at Great Glas just in the same way; but I have no wish to be captious, but as they do incline they cannot be anti-inclinal. The older rocks at Great Glas are very much thrown up and intermingled with the transition clay slate, and not so as to disturb too much the stratification surrounding the lodes for the production of mineral, and the very great length of the deposit of high quality copper discovered at the above mine is a proof of what your Correspondent writes, that where the older rocks are thrown up among the clay-slate copper in such districts may be looked for, especially when there are good strong and well-defined lodes. The same phenomenon geologically is to be seen at the old Gifron Mine immediately to the east of Great Glas Mine, and again at the Great Ashford, on the north side of the Great Glas, at each of which large deposits of copper have been discovered, while at the old Severn Mine, immediately to the north of the Great Ashford, fine patches of copper are met with in a lead lode, where men are now raising lead and copper by the ton, and as I have been informed, are doing very well at it. Again, at Nant-y-Car and Dalrhiew, some 20 miles south-west of the Van, where fine discoveries of copper and lead were made many years ago, the same kind of rocks precisely are to be seen at each of those places, and they are all more or less in an inclined position.

I fully agree with your Correspondent that to the east and north-east of the Van Mine large or paying deposits of copper ought not to be looked for, the stratification in that direction having too great a degree of sameness thoughout. By the bye, I was very glad to hear the other day that the Van prospects are very cheering, especially in the bottom level, while it is well known that Van Consols, or better known as the old Bryntail Mine, never looked so well, and has its prospects improving daily. With a little time and patience there is every prospect that the company will eventually be well rewarded. Mr. Blake, in his letter to the Journal some time ago, made a slight mistake. The lead which he was shown at Great Glas was taken from a north and south lode, which forms a junction with the great copper lode at an angle of about 45°. The Van lode is more to the south, and forms a junction with the great copper lode, not far from the same point as the other lode does. CARACTACUS.

June 7.

THE SOUTH CAMBRIAN MINES.

SIR,—I am glad to find from a perusal of last week's Journal that your Correspondent on North Wales, Salop, and Cardigan proposes to accept my invitation and pay an early visit to this mine. The visit and inspection of the mine by your Correspondent or any other scientific observer and author will be highly appreciated and welcomed by me both in the interest of our shareholders and the general public, as the opinions and observations of gentlemen disinterested and of acknowledged ability, such as your North Wales, Salop, and Cardiganshire Correspondent has on so many occasions in the columns of your Journal proved himself to be, are more precious than "refined gold."—*June* 10. A. J. W. STRINGER.

DISCREPANCY IN THE PRICE OF MINE SHARES.

SIR,—Can any of your readers explain why it is that the shares of two adjacent properties of identical promise and prospects are so frequently of different market values? The 1*l.* shares in one of the companies in which I am interested are quoted at 1½—at a premium of 50 per cent.; whereas the 2*l.* shares of the other are also quoted at 1½—a discount of 25 per cent. The properties of the two companies adjoin, and so far as I can gather there is no element of success in the property and prospects of the former company which is wanting in that of its neighbour. Indeed, if I am not mistaken, the first great discovery of mineral which has taken place hails from the estates of the second company, yet the merits of the second company are as far as possible ignored. If shares in the one company are cheap at 30s., what must we think of the shares of the other, which if they were of the nominal value of 1*l.* instead of 2*l.* would be quoted at the above price of 15s.? Can it be that the investing public is not aware of the difference between the nominal value of the shares of the two companies? This is the only explanation that occurs to my mind, but I should be grateful to anyone who knows more about these matters than I do, and who would take the trouble to enlighten one who is sorely— PUZZLED.

[There is no question that in many instances the nominal par value of a share is, and perhaps properly, ignored, the question considered being—How much *per share* dividend is probable, and what interest, assuming the estimate to be correct, will be returned on the investment?]

MINING IN IRELAND.

SIR,—In the Share List in the Journal I see "Dunmanus Bay Mine, in 10,000 shares, 1*l.* paid, price 1½." I have lately visited both sides of Dunmanus Bay, but did not observe any mine at work there. Perhaps some correspondent will kindly point out the locality of the mine? TOURIST.

ALL ABOUT TIN.

SIR,—During the past and the earlier part of the present century the price of tin ranged considerably lower than present rates, except during the great war, when most articles fetched abnormal prices. Tin mines were worked then, and were worked at good profit some of them. A little enquiry as to how this was done may not be uninteresting, and, perhaps, may not be altogether unprofitable. In the first place the mines were shallow, tin ore was found in the lodes in rocky ground quite close to surface, and in the flats in rich pipe veins. The men who would open these mines were, perhaps, not numerous, but they were tinners; and knew not only how to find it, but how to break it, and how to take care of it when they had got it. They could get through pretty hard ground then without having to pay those excessively heavy dynamite bills; but they had something far more effective than dynamite or even than cast-steel, for they possessed one qualification which, perhaps, may have been equally as useful to them as anything since introduced—industry. They could dress their tin without sending a very large proportion of it into the Red River. There was no Government Mine Inspector to compel them to fix their ladders at an inconvenient angle; to fence off old underground workings where nobody wanted to pass; or to bother them much about the ages of the boys and girls employed. Still, as they do not seem to have understood the laws of ventilation very well Dr. Foster might not have been to them an unmitigated evil. There was no Factory Act compelling them to keep their children idle until they had attained 14 years of age. In fact, most of the young people could get their living and materially assist their younger brothers and sisters, and sometimes sick parents, before they had got so old. Having commenced working early, they had attained remarkable skill in the use of their tools; instead of having been carefully trained into laziness they had acquired habits of industry, and had become inured to fatigue and endurance. These young people had acquired by that time sufficient mineralogical knowledge to detect the particular mineral at which they were employed with certainty and promptitude. In short, "they knew tin." Hence the mineowners had the advantage of a smart race of working people around them who had not been cuddled into milksops—an industrious population sufficiently skilled in their business in the old tin districts. There were drawbacks sometimes. These skilled tinners were not very widely spread over the country; they did not travel much while they could get a living at home; hence a miner employed on copper ore would only be a copper miner, and would pass the tin over as of no value; consequently, while in some districts these old tin mines were worked skilfully and well, in others they were not so. Each class of miner seems to have stuck to mining to a very great extent for one metal only, without trying to understand anything else. While this was a disadvantage sometimes to the mineowners of that day, it has left some advantages to the present generation in the chances that are turning up now and then of finding shallow profitable mines, which the old men did not happen to hit upon.

Another disadvantage the old miners suffered from was that of having had to pay what would now be regarded as excessive dues—say, an eighth or a twelfth of all the produce. They had not, however, to suffer from the intrusion of gamblers. Many men call themselves mining men now who go in for a few shares to-day, expecting a great rise in price to-morrow or next day, and if such does not occur they commence at once abusing the management, vilifying the dealers, and cursing mining altogether. Such are not the principles on which successful mining can be carried on. Rich lodes have been occasionally struck in a day, and will be again; but the majority of our successful mines have been the result of patient enduring labour, and of continued well directed application.

All honour, as well as all the profits that can be justly secured, are due to mine adventurers who patiently and persistently have supported these important industries through troublous times. Unfortunately many have not done this. They have left the mines the moment there was any indication of dark days, and have returned with the swallow as soon as the sun has shone out again. This class seem to think that to them is due all the profit for their temporary support exactly when they are not wanted. They then pretend to take the public and the mines under their especial care; their voice is heard in the market-place and in the street. At mine and other meetings they talk with the greatest assumption; they get themselves mixed up in the direction of affairs, get the earliest information, sell out on the first note of danger, and leave the real mining men to struggle on again as best they may. Like fine weather sailors who would let their ships remain in port all winter, to be found rotten in spring, such miners would let the engines remain idle in dark times and the mines full of water. From the efforts of these men we should get very few successful mines in a district where continued pumping has to be carried on in order to prove them.

But mining in a great metalliferous centre has to be pursued and continued under all circumstances, whether prices of metal be up or whether they be down; and although we cannot, except in a few instances under exceptionally favourable circumstances, expect great profits during low times, we can at all times guard against disastrous loss, and get the profits when prices of metals have returned to their normal position. To secure these results we must stick to shallow mines in comparatively unwrought ground, and leave the deep watery mines to men who have longer purses than are necessary for their

immediate requirements. In short, in tin mining as for all the other metals, we must select new mining ground in good geological positions in good districts. And with proper care in selection we can ensure against loss with the prices of tin and other metals settled about the same as now, and no occasion for grumbling if at intervals we should get a temporary drop. W. TREGAY.

THE ST. GOTHARD TUNNEL.

Sir,—It appears to have gone the round of all the papers that the pressure on the vaulting through the white porous rock is so great as to threaten the entire destruction of that part of the tunnel, rendering a considerable detour and consequent great delay necessary. One would fancy there must be some error, or at least some exaggeration, here, as the engineer must be perfectly aware that tunnels and mines of every description, in wet, porous, shifting and swelling rocks, although liable to collapse under pressure, are always relieved from such liability, in its most dangerous aspect, on draining such rocks. No doubt but that in this instance draining can be cheaply and speedily attained by a few transverse drifts along on each side near the floor of the tunnel. Such drifts need be no larger than necessary to afford free flow for all the water required to be discharged, and may probably be confined to a few holes put in all along the sides of the rock-drill. Having seen and had to perform pretty much of this kind of work, I have no doubt that in a few days we shall hear that the porous white stone has been drained and that all dangerous symptoms have ceased. W. TREGAY.

Redruth, June 10,

MINING IN CARDIGANSHIRE CROWN LANDS.

SIR,—Now that we have a Liberal Government in power and two Liberal members representing this county and borough, both more or less connected with mining enterprise, I trust something will be done to alter the unfair terms which are imposed by the Commissioners of Woods and Forests for mineral grants under Crown lands in this county. It is hard to see that the Royal authority in India has determined to forego rents and royalties for the purpose of encouraging the new gold fields in that country, while our poor struggling miners at home are unable to prospect on Crown lands in consequence of terms being demanded such as no other landlord in the kingdom would demand. A Royal Commission ought to be appointed to enquire into the whole system under which Her Majesty's lands and manorial rights are administered, and I am greatly mistaken if it is not found that by liberal concessions the revenue therefrom would be greatly increased. CEREDIGION.

June 10.

DRAKEWALLS MINE.

SIR,—After nearly two years of unceasing work we have, by the aid of the rock drill (Ingersoll's), succeeded in driving the deep adit level about 224 fms., and have this week successfully tapped the main body of water in the old workings. I have refrained from reporting in the Jourual on our work during the time it has been in hand, as I wished to give the shareholders and the public results rather than promises. It is very remarkable that this mine, although being almost one of the oldest in Cornwall, is only 100 fms. deep, and no workings of any importance below the 80. In many places the width of the lode taken away was over 60 ft., and to keep the workings free from water by steam power cost about 5,000*l.* per annum, which sum will at least now be saved. It is expected that considerable returns of tin will be made from about the 60, as the present company were at great expense in cross-cutting south and laying open the south part of the lode, and from which large returns of tin were made in 1875 and 1876. The water has during the week drained about 8 ft.—*Tavistock, June* 10. MOSES BAWDEN.

COPPER AND ITS FUTURE.

SIR,—Having watched the course of prices of this metal for some time past I should think that, notwithstanding conflicting opinions, a rise cannot be very far off. The charters at Valparaiso are now considerably under the average—very much so, and the new sources of supply are limited. Indeed, 56*l.* offers no inducement to shippers, still less 11s. the unit for ores. It is true stocks in this country are heavy, but they are not being replenished, and this will be seen and felt later on. The consumption is large—very large, and bronzes and brass ornamental work now much in fashion. Locomotives, machinery, and marine steam-engines absorb enormous quantities. The Navy, now all steamships, takes a great deal. New foreign navies are springing up. Gun-metal is more than ever in demand. It is true ships are now built of iron, and require no copper bottoms, but the quantity of copper and brass fittings in a steamer and its engines probably exceeds what she formerly carried as sheathing. Sailing ships will soon be things of the past. I think miners can take heart and prepare for a revival from this long depression. The more machinery the more copper required, and machinery is everywhere superseding manual labour, as it is wind, water, and horse-power. After all, but a very small proportion of the wooden ships of the past were copper bottomed.—*London, June* 7. W. W.

LEAD MINES—A SUGGESTION.

SIR,—If you agree with the following remarks, and which I think you and most of your readers will do, I trust you will do me the favour to allow them to appear in your widely circulated Journal this week, which I feel convinced would do more to achieve the object in view than any other mode that could be devised for accomplishing it. If all the dividend-paying lead mines were to unite in ceasing to work and develope their mines so as to derive any profit whatever from them, and to restrict their operations merely to what was absolutely consistent to the welfare of the present carrying on of the mines until pig-lead had reached 18*l.* per ton, I fully believe this object would be achieved before the end of the present year. The document should be signed (say) by the Van, and sent on to Great Laxey, Roman Gravels, North Hendre, Grogwinion, Green Hurth, Isle of Man, Leadhills, Lisburne Mines, Minera Mining Company, Red Rock, Rhydalun, Tankerville, South Darren, &c., as well as to all the chief producing mines in the kingdom. It is very certain that should lead further recede dividends must shortly cease altogether, and if this step is taken the sooner it is adopted the better.

Geginan, June 8. ABSALOM FRANCIS.

MONTGOMERYSHIRE LEAD MINE.

SIR,—Having to pay a visit to Machynlleth I was sorry to find mining affairs were very dull—"had not been known so bad for the last 20 years," one of my informants told me, the slate quarries being also almost at a standstill. The time was when Machynlleth was busy with the arrivals of lead ore and slates, and return loads of timber, coal, powder, &c. Now all is still and silent. I am quite at a loss so account for this, unless it is to be attributed to the very low price of lead. One thing is certain, that there are as good mines in Montgomeryshire now as ever there were. The heart of Montgomeryshire lead mining may be said to lie between the towns of Llanidloes and Machynlleth, commencing at the oft-quoted Van Mine down to Ayddgen Mine, the most western lead mine of the county (although immediately over the boundary in Cardiganshire are several well known mines, more particularly the Cambrian Mines). Near Machynlleth the principal mines are Dyliffe, Dyfngwm, Cyfarthfa, Glasllyn, Rhoswydol, Cwm Byr, and the Cae Conroy Mines. All these mines were at one time selling ore monthly, and now there are few, if any. Dyliffe belonged at one time to Messrs. Cobden, Bright, and Milner Gibson, and yielded very large profits, the former having induced his brother radical into it, he having married a native of Machynlleth. Again, Sir John Conroy made large profits from Llanerchyrair Mine. But these gentlemen looked after their interests, and did not leave them entirely in the hands of the mining captains, though I think if they were more listened to by boards of directors in London mining would be a little more successful. I was told by one old Welsh farmer of a mine near his farm where a good lode having been discovered at surface a deep cross-cut was driven to cut it, the agent having said it would take about 25 fms. The company stopped as soon as ever this distance had been driven, and my informant told me the miners working there had said there was not a fathom to cut the lode, as the water was bursting out; in fact, they thought they had cut within a few inches of the lode. This would hardly be credited, but is a fact.

The mines of this part of the country are well worthy of the attention of capitalists, as they have proved highly productive in the past, raising the gross produce of lead ore for this county for many years above that of Cardiganshire, and second only to any county in either England or Wales. Wages are cheap and water-power plentiful, with average facilities of transit, and there are, no doubt, more Vans than one in the county if capital were only brougdt to bear. Most of the mineral lands are under Sir Watkin W. Wynn, Bart., one of the most liberal of landlords, who, through his courteous mineral agent, Mr. H. Smith, does all in his power to facilitate mining enterprise.—*Machynlleth, June* 10. GALENA.

[For remainder of Original Correspondence see this day's Journal.]

THE HALKYN DISTRICT MINES DRAINAGE SCHEME.

In the year 1875 was launched a scheme with the above title of no little interest to the mining community, and upon which depends to some extent the prosperity of one of the most important mining districts in the kingdom.

Halkyn is a parish in the county of Flint, equidistant from the towns of Flint and Holywell; and under the title Halkyn District are comprised portions of the contiguous parishes of Halkyn, Northop, Cilcen, and Mold. These lie more or less upon the carboniferons limestone, which forms a ridge, attaining a height in some places of 1000 feet, running with several breaks through the county in a northerly and southerly direction, having the coal measures overlapping the eastern side; and cropping up west is the clay-slate, which forms a range of hills, to which Voel Vammau, with an elevation of 1800 ft., belongs.

The limestone, with the lower measures of the coal series, is the location of the ores of lead and zinc for which the county is so famed; the deposits being generally found in lodes having an easterly and westerly direction, which almost invariably become richer as the coal measures are approached. They are sometimes found in flats lying between the millstone grit and the limestone, as at Vawnog, and less frequently in flats between beds of limestone, of which a remarkable instance occurs at the North Hendre Mine. The cross lodes or courses, or those having a northerly and southerly direction, are sometimes productive; but they are generally regarded as only feeders of the east and west lodes.

Prominent amongst the deposits are those in the district in question. The Halkyn district has already yielded millions of pounds worth of lead ore—notably at Pant-y-Gof, at Hendre and North Hendre, at Rhosesmor, and at the Rhyd-y-Mwyn, and Llyn-y-Pandy Mines, which now belong to the Rhydalun Mining Company. At Pant-y-Gof the profits—not to mention the yield of ore—are said to have been 80,000*l.* a year for 16 years consecutively, and 100,000*l.* a year for three years, or more than a million and a half; and in the prospectus of the Pen-yr-Orsedd Mine, lately published, it is stated that the Rhyd-y-Mwyn Mine or lode has already yielded 130,000 tons of ore, which, valued at 12*l.* a ton, will give a total value of 1,560,000*l.* From information gleaned from another source the yield of the Llyn-y-Pandy lode was for many years between 200 and 300 tons a month. So abundant have been the returns that it might with some show of reason be inferred that the district is exhausted; but this is a delusion, as will presently be shown. In the first place several magnificent virgin tracts await development, and when such tracts are developed in a judicious way the establishment of profitable mines is almost the invariable rule.

The successes at North Hendre and at Rhosesmor are of this kind; and a recent instance is afforded in the case of the Rhydalun Mining Company, which undertook the trial by means of a cross-cut adit level of that fine piece of virgin country, 1500 yards in extent, lying between the Llyn-y-Pandy and the Pant-y-Mwyn lodes. The adit had not proceeded more than 256 yards, when a lode was met with, the returns from which soon enabled the company to enter the list of the profitable mines of the country; and it requires no prophet to foretell that the complete development of the tract in question, as well as of others in the possession of the same company, will result in the discovery of other productive lodes.

Now, in the second place, with regard to the old mines it is an undoubted fact that they are for the most part worked to but a comparatively shallow depth; and the handsome returns of most of them to the last, no less than the reports of eye-witnesses, bear eloquent testimony to their undiminished richness, and great as has been the yield in the past it may easily be eclipsed in the future.

The reasons of their suspension or discontinuance are now entered upon, and in discussing them the bearing of the greater part of the foregoing is shown upon the subject of this article. The price of lead ore, as low as 6*l.* or 7*l.* a ton, and a royalty as high as an eighth part, had a great deal to do with it; but the factor outweighing in importance all the rest was the excessive water charges, and in most instances the inadequacy of the pumping power, however great it was, to carry the mines deeper. The ore was followed into a regular sea, common to nearly all the mines, and to the fact that the district was split into several grants, owned by rival companies, and to the absence of a combined effort to deal with it must also be ascribed in some degree their suspension or collapse. Isolated efforts were subsequently made to resuscitate some of them; but, as might have been predicted, without success. At last, recognising the necessity of dealing with the water difficulty as a whole, and the comparative impracticability of arranging for the purpose a combination of the different companies interested, the best possible proposal was made—to unwater the whole district by an adit level with branches when necessary into some of the chief mines. This was merely talked of until Mr. Smith, solicitor, Chester—a gentleman who had long been known to take a deep and enlightened interest in the development of the resources of the country—appeared on the scene, who soon elaborated a scheme, which was launched upon the public as the Halkyn District Mines Drainage Scheme. A company was soon formed to carry it out, empowered by special Act of Parliament to levy equitable royalties upon ore mined through the medium of the drainage. His Grace the Duke of Westminster, ever ready to promote the prosperity of the district, presides over the concern as chairman; and his brother, the Right Hon. Lord Richard Grosvenor, M.P. for the county, has a large interest in it as well. The scheme has for some time been bearing fruit—about 4,000,000 gallons or nearly 18,000 tons of water a day having been already tapped; and the 60 tons of lead ore sold last sale from Rhosesmor, to be followed by large monthly sales, attest the value of the relief. Rhosesmor shares, which some time ago could be picked up at 10s. or 12s. each, are now firmly held at 70s. The water is subsiding at Hendre, too; and such is the case, it is rumoured, at North Hendre, and daily it is expected that that magnificent combination of mines owned by the Rhydalun Mining Company will be included in the same category, rendered the more imminent by the deviation of the tunnel to intersect the great water-course of the district, known as the Pant-y-Ffrith cross-course. Whether this be the case or not it will be so, without doubt, if it be continued into the trough ahead, into which the measures dip easterly and westerly. The measures at the axis, or the common line of depression towards which they dip, will be found broken up in all probability in such a way as to afford capacious channels for the flow of water, especially from mines in the trough, which is the case with a portion of the Rhydalun Mines, and the intersection of these channels may be regarded as the solution of the whole problem. Thanks to the system adopted and the ability brought to bear upon the undertaking by the contractor, Colonel Beaumont, with his unrivalled drill, the speed attained in the tunnel is surprising. As much as 100 yards have been accomplished in a month, and that in limestone, in which eight men could have driven under the old system only 4 or 5 yards in the same time—whilst the average speed has exceeded that of manual labour 15 or 20 times told.

The company is accomplishing a great work, and the directors, with the engineers, Messrs. John Taylor and Sons, are to be congratulated on the success that is, in fact, crowning it. They have laid and are laying the Halkyn district under a great obligation, and the fortunate owners of the mines in it have special reason to be grateful.

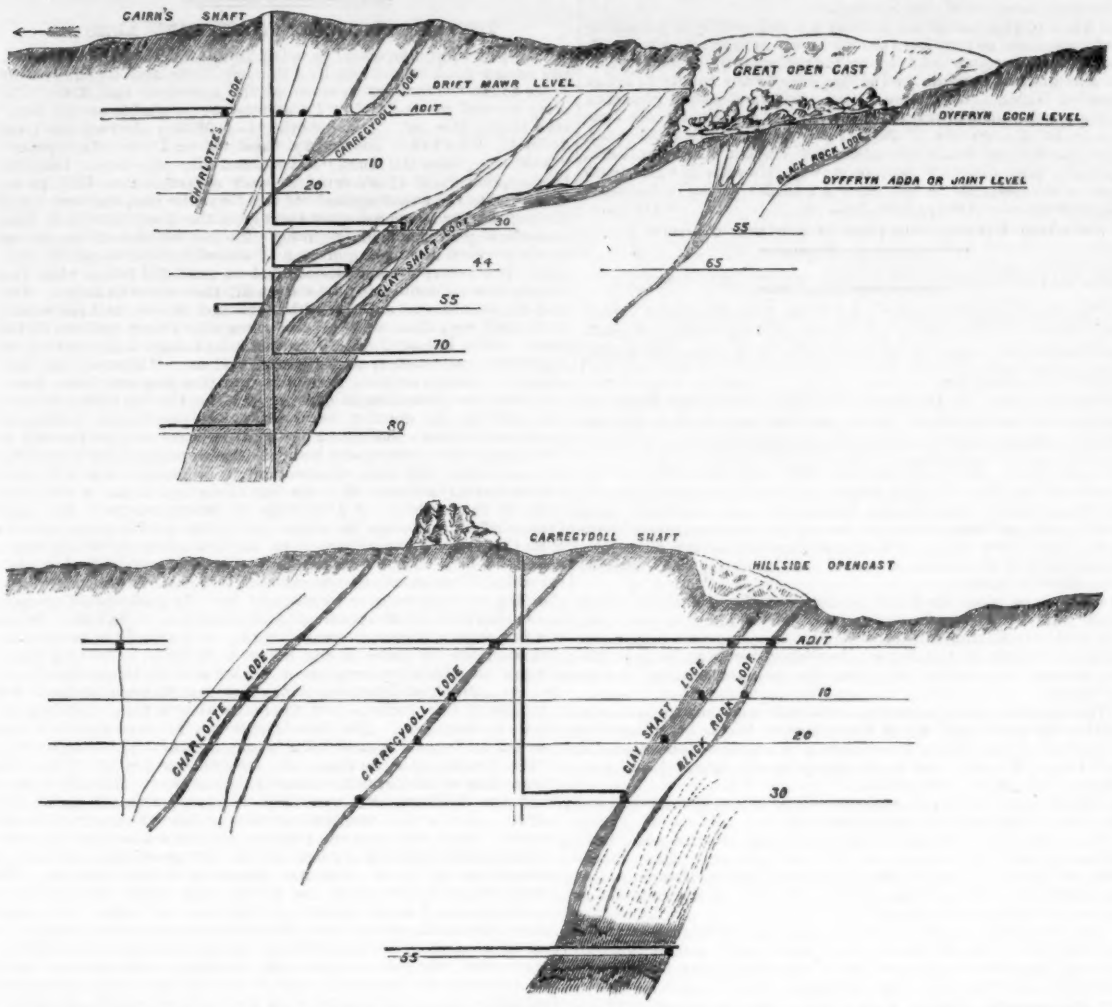
THE WILD DUCK, OR SPORTSMAN'S ARMS

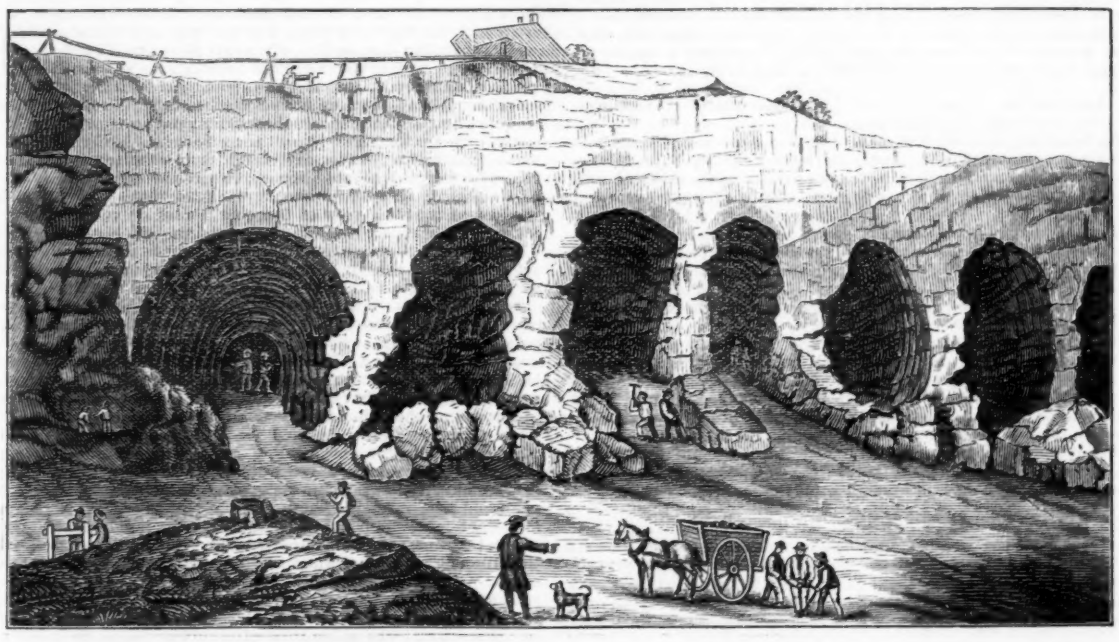
"It's fine an' comfortable," says Old Tom, "to mit again, comrades, and have a good denner; and as the boy Jacky and I went over to Truro to see the foundation stone of the cathedral laid, I tho't I'd bring un with me to-day." "I'm sure we are all glad to see the boy," says Uncle Henney. Did ee bring the *Mining Journal* with ee, Jacky?" "Iss I ded," says Jacky, "and will read to ee after denner.' "Well, sose," says Old Tom, "it happened like this here. I said to the boy, 'Jacky, if thee's mind to work a double core we'll go to Truro to see the grand sights.' 'I will,' says the boy, and sure enuff the night before hand away we went cross the country to be in time to catch a good place next morning. We had a couple of big pasties in our pockets, and having a pint of ale with them we got on fust-rate. But before I tell ee about what we see'd, I'll tell ee what Jim Priddicks see'd and heard as he went all the way to Grampot. Jim said the station was covered with flags and flowers and red broadcloth, and was close to the place when the Prince got out of the train. 'The Prince,' Jim said, 'went up and shook hands with Lord Falmouth, quite hearty and friendly, and said, "How are ee, Falmouth? Glad to see ee. Fine purty weather you got down here." And then the Prince's wife got out, and she, the dear little woman, was smiling and ducking her head to the people, and looking so happy as a queen; and the Prince and his two sons, all the way to Tresillian, wor looking quite happy.' And no wonder, for they never had, and never will have, a more hearty welcome. Jim will never forget that day's sight. We, the boy Jacky and I, had a full view early in the morning of Lemon-street, Boscawen-street, the High Cross, and other places. So we tho't we would catch a place near the High Cross, and it turned out to be the best place for seeing everything. But the bands of music and thousands of people singing made me think I was in another world, and could'nt tell whether I wor standing on my head or my heels, and the boy Jacky could'nt speak to save his life; he was confoundered with joy and gladness. When the Prince passed we wor close to him; he ducked his head to we, and was going to shake hands, but could'nt stop, as 'twould throw the gentlemen in black breeches and black silk stockings, with aprons tied up in front, out of order. Somebody said they wor bishops; but I wonder ded St. Peter and St. Paul ever wear a black breeches and black silk stockings? The Free Masons wor a grand sight. A man near me said that Solomon was a freemason, and laid the foundation of the Temple, in Jerusalem, like they ded in Truro." "Was the Prince dressed very grand?" asked Jan Temby. "Hold the' tongue, Jan," says Old Tom. "He was dressed like a gentleman, and wor'nt half so proud as the young fellows coming from the Institutions and the Mining Schools; and the Princess, she was a dear little beautiful woman, dressed plain and neat, and not half so smart as our fools of bal-maidens going to Centenary preaching Sunday evenens. The young princes wor fine lads, and fit for kings; and it is said that no man in England works so hard as the Prince of Wales. Talk about gentry, and half-gentry! why, the Queen—the best little woman that ever lived—and all her children—and grand-children, by all accounts—have been trained in such a way in every useful work as would make poor people ashamed. Did'nt the boy Jacky buy a newspaper in Truro, with a picter in un, with the Queen's second son, Admiral Edinburgh, sitting on a three-legged stool, in an Irish cabin, discoosing with the starving people, and the pig, and cocks and hens close by, as if they wor used to princes all their live. I tell ee, comrades, there is no fear for Old England while we have such a good queen, and noble sons and daughters and grandchildren. Well, in the evening Jacky and I finished our pasties, and got home in a third-class train, but all the sounds I heer'd that day are not gone out of my head yet, and such a sight will never be again in Cornwall; and it was a thousand pities the Prince and his Missus and the children did'nt come down to go to Gwennap Pit on Whitsun Monday—that was a sight they'd never forget." "I think," says Uncle Henney, "that it was a wise plan, Old Tom, to give the boy Jacky such a treat, and I'll agree we'll now hear'n a read the *Mining Journal*, and lev us know what's going on." So Jacky, after reading all about furrin mines, &c., all over the world, come at last to another fall in the price of tin, the tin ticketing, and the proposed syndicate for the purchase of tin—— "Stop!" says Jan Temby. "Sendekate! what's that?" Nobody in the mittin could tell. "Jemmy Dowa," says Uncle Henny, "go's out and ask Old Becky for a dicksonary, or Moore's Almanack, and we'll soon know the meaning of sendekate." Jemmy soon returned, and said that Becky had nothing but the maid Liza's spelling-book; but there was an Irish packman in the kitchen, and as most of those men wor good scholars, he would ax'n to come in. The Irishman came in, and Uncle Henney said "We are all bothered to find out the meaning of a big strange word; but before we begin about it, perhaps you would like to eat a bit of beef?" "As sure as my name is Patrick Donohoo," said the Irishman, "that same would be mighty plasing entirely." After Mr. Donohoo had finished, he said, "Now, my friends, for the big word, and if it bates Patrick Donohoo—the divil's curse to it. But what is the word?" "Sendekate!" says Jan Temby. "Syndicate," whispered the boy Jacky. "Oh!" says Donohoo, "is that all?" "Iss, it is," said Uncle Henney; "and we want to know the meaning." "Well, then," says Mr. Donohoo, "syndicate means a little company to cheat a big company; and big companies sometimes cheat the public." "I suppose," says Jan Temby, "you don't understand the selling of tin at ticketings, or would tell us what you think of the plan?" "I think the plan," said Donohoo, "is like what the great O'Connell said to his friends, 'Scratch me, and I'll scratch ye!' for I see by the papers the price offered at the ticketing by three companies was exactly the same, and that the difference in price offered by the smelters was of no consequence; and my idea of ticketing is—the smelters may as well meet beforehand, behind the back door, and say, 'No. 1, 2, and 3, offer 43*l.* per ton; No. 4, offer 43*l.* 2s. 6d.; No. 5, offer 42*l.* 19s. 6d.; No. 6, offer 43*l.* 10s.' That's my idea of ticketing for tin, my friends, and I feel sure in my own mind that the miner will never have a fair price for his tin unless he smelts his ore." "I did'nt think you know'd so much about tin," says Jan Temby. "Why, then," says Mr. Donohoo, "I have weighty reasons for knowing about tin, for when the price is down miners' wages is down, and I cannot sell my goods; and if the proprietors of mines would only smelt their tin prices would be good and steady; the rogue's occupation would be gone; you would all earn fair wages, and would be able to buy my goods, and, as you say in Cornwall, 'One and All' would be benefited." "He must be a clever man to know tin in the stone," says Jan Jewill; "but I think Mr. Donohoo do know a good deal more about tin than they that got so much to say about it; and I'm sure we shall always be glad to see him at our mittins." "Sure, then," says Mr. Donohoo, "I shall attend with all the pleasure imaginable."—*From Cousin Jack's Unpublished MSS.*

FRENCH RAILWAYS.—The total length of railways open for use in France at the end of 1879 was 22,776 kilos. (14,120 miles), being 618 kilos. more than in 1878. The total receipts from all sources in the past year were 913,732,336 f. (36,549,294*l.*), or an average of 48,837 f. per kilometre (about 1210*l.* per mile), as compared with 41,832 f. per kilometre, or 1036*l.* per mile, in the previous year.

PIG-IRON.—According to a Custom House Return just published the following quantities of pig-iron were exported during April:—From Middlesborough, 58,274 tons; from Liverpool, 25,237 tons; from Glasgow, 23,575 tons; from Newcastle-on-Tyne, 7053 tons; from Ardrossan, 6909 tons; from West Hartlepool, 6578 tons; and from Whitehaven, 6037 tons.

THE MINERAL WEALTH OF ANGLESEA—THE MONA MINES.





MONA MINES, LIMITED.

The cry of "bad times" has for a long time assailed our ears. A general depression in commercial circles, more extensive and of far greater severity than any hitherto recorded in our industrial annals has prevailed throughout the world. No interest has remained untouched by its baneful effects. The mercantile community of our country has been visited with losses of fabulous amounts; the shipowner has suffered from a terrible depreciation, the agriculturist has been sorely tried, while that branch of enterprise in which we are chiefly interested—namely, the metalliferous mines carried on in all quarters of the globe—has been forced to struggle hard for existence, and unhappily not always with successful results, against the untoward influences which have borne thus heavily upon all classes. It is, therefore, with feelings of no little gratification that we find ourselves justified in expressing a hope, which we consider well founded, that we have at length, after weary waiting, reached a phase in the course of events which will bring renewed activity, and its consequent prosperity. Those enterprising capitalists whose skill and courage develope the rich stores of mineral wealth which contribute so largely to the necessities and comforts of civilised society may well be congratulated on the perseverance they have displayed, and the prospects of deserved success which in all probability awaits them at no distant date. Individual interests may suffer the temporary relapses which commonly delay a thorough recovery, but the general soundness of the improvement indicated by the Trade and Navigation Returns, published in the Times of May 8, cannot fail ultimately to secure increasing prosperity in all departments of trade and manufacture.

Times of depression will come. They recur with a periodicity which some pretend to calculate with precision; others, again, refer them to subtle solar agencies; but while philosophers employ themselves in solving the causes of these economic conditions, shrewd men of business, knowing from experience that the taking of a certain turning of the tide leads to fortune, coolly and wisely take advantage of low markets, panics, and distrust, in order to reap the rich fruits of the prosperity which invariably succeeds.

We rejoice to find that this sagacity is not wanting among our own friends and subscribers; and in bringing before our readers the mine whose name heads the present article we propose to give a brief but interesting history of the most extraordinary metalliferous property in the kingdom, a description of its products, and their mode of occurrence, and an estimate of its future powers of production, founded according to the appearances now presented by the various seats of operation. This remarkable mine occupies the eastern portion of Parys Mountain, and is only separated from the Parys Mine by a boundary line settled some 60 years ago after much extensive litigation. Traces of ancient mining operations discovered from time to time prove that the mineral riches of these mines attracted attention at a very early date, but the discovery which has in modern times rendered them famous was made on March 2, 1768.

A few years before this Sir Nicholas Bayley, of Plas Newydd, granted to Messrs. Rowe and Co., of Macclesfield, a lease of the Penrhyn Du Lead Mines, now known as the Assheton Mines, in the county of Carnarvon, on the condition that certain exploratory work should also be done on his portion of the Parys Mountain. This provision was reluctantly complied with, but after much discouragement, and according to tradition many threats of abandoning the work, a lucky accident displayed close to the surface a mass of copper ore, which speedily secured an immense fortune to lessees, and swayed the copper market with an influence no less potent than that exercised in the present day by the imports arriving from the richest foreign copper producing countries. It afterwards became by marriage the property of the Marquis of Anglesey, who on the expiration of the lease worked it with unfailing yearly profits, until his death, when it fell to the trustees under his will.

They carried it on successfully for a time, but having in view the closing of the trust they let it some years ago to a party of local gentlemen, who continued its working until it was taken by a limited company formed in December last. The good fortune which has attended the adventure so recently undertaken will be best appreciated by an examination of the facts and figures with which we are courteously furnished, and which we are most happy to lay before our readers as an encouraging instance of mining success.

For many years the raising of ore was carried on by open quarrying, and by means of a number of shallow pits, sunk according to the discretion of working miners, which ultimately widened out into great excavations, known as opencasts. From these ore was raised in large quantities until very recent times, but the deposit being of great width, and having an average dip to the north of about 45°, it was found that the superincumbent ground would not support itself if this mode of mining was continued to a great depth. The sinking of shafts to the north, therefore, became necessary in order to attack the lode below the bottom of the opencasts. This work has been continuously carried on, and recent discoveries prove beyond all doubt that the great deposit of ore is not limited to the superficial extent attained by former workers. The third of the above engravings (reduced from an old drawing, date 1780) will give some notion of the mode of excavation formerly practised.

It will be seen that the working consists of open quarries and huge caverns formed by following and taking out the ore, and a just idea of the size of the masses may be formed from an old map recently found, in which the cavities are shown as varying from 60 to 90 yards in length and breadth. The explorations made immediately under the opencasts somewhat disappointed the proprietors, the lodes appearing to have become poor and small, thus giving rise to the fear that the prosperity of the Mona Mine was a mere matter of past history, and doomed never to return. Nothing daunted, however, by this want of success, and bearing fully in mind the importance and magnitude of the question involved, the late company determined to solve the problem by further sinking. The result thus obtained is illustrated by the section marked B. The great opencast is shown on the right hand, or south side of the section, while Cairn shaft to the north cuts in depth the orey masses, which were formerly worked away at the surface. This shaft first entered upon the lode between the 44 and 55 fm. levels, and continued in ore until its sinking was suspended, about seven years ago, owing to a deficiency of engine power to keep the water down. While work was proceeding here the returns from this shaft alone were from 300 to 400 tons of ore a month, but the gradual rising of the water first reduced the returns, and afterwards caused the abandonment of this part of the mine. The late company erected a powerful windmill, and laid a fine system of pitwork for draining this shaft, but owing to occasional calms it is not found to be reliable for mining operations without a suitable auxiliary steam-engine. This deficiency is now being supplied by the Sandycroft Foundry Company, who are constructing a fine engine, specially suited for the work. When this engine is set to work this portion of the mine will resume its former activity, and there is no reason why the returns of ore formerly obtained should not be again attained, or even exceeded, after a proper opening out of the ground. There was ore on the bottom of the shaft when the sinking was stopped, and the cross-cut going north at the 80 fm. level was driven through ground of the same character as that encountered in the shaft.

Referring to section C, which is taken at a point about 90 fms. east of section B, it will be seen that the same conditions are found to exist here. The workings in the shallower levels below the hill side opencast were not so profitable as anticipated, but the cross-cut recently driven south at the 55 fm. level, as shown on the section, reveals the fact that the ore suffered only a temporary pinch, and that it opens out downwards in its original size and richness. This part of the mine improves daily, and although the lode was cut only a very short while ago upwards of 200 tons of ore were raised from it in April. It is almost beyond doubt that this great ore channel continues unbroken along the whole line of 90 fms. lying between these two sections, thus forming in itself a mine which, according to present appearances will produce enormous quantities of ore for a great many years. When in addition to this it is borne in mind that in driving east at the same level a powerful and rich lode of ore is laid open, and may almost with certainty be depended upon for at least 150 fms. eastward, some idea may be formed of the prospective value of this portion of the mine. It may in a few words be thus summarised. The quantity of ore which may be obtained here depends only on the amount spent in developing the ground, and the skill exercised in spending the money judiciously.

Going far to the east to another portion of this extensive sett we come to what are known as the Blue Stone workings, a name conferred on the place through the fact that when bricking a shaft here many years ago the miners got into a large bed of what they termed in Welsh Garreg Las (literally translated Blue Stone), and on which they bestowed many energetic epithets, owing to its blunting the tools much more rapidly than the harder rock in which it occurred. This mineral was then thrown aside as useless, and used as road making material for many years, and even very recently the price obtained for it was so low as hardly to make it worth working, but certain improvements in its treatment having been effected by some continental metallurgists it now fetches a price which renders it highly remunerative. Since the present company was formed, in December, the sales of this ore have been continuous. No estimate can be made of the quantity obtainable, owing to the ground having fallen together after the abstraction of the copper ore which accompanied this mineral, but judging from the results obtained by recent clearings and reopening there can be no doubt that enormous returns may with certainty be relied on. A discovery made lately is likely to increase the monthly raisings very considerably. A large contract has been made for deliveries of the stuff, and shipments are made regularly.

It is the confident belief of those who know the mine that discoveries of blue stone will be made at several points; and as it usually occurs in great and solid masses it may safely be assumed that the supplies will be maintained for a long period, even if the present workings become exhausted. This singular ore is perfectly solid, and requires no treatment before sending away, so that the only expenses attending it are the raising, the transport, and the royalty.

Not the least valuable and interesting part of this concern is the system of precipitation carried on. The waters of the mine contain copper to such an extent as to make its extraction highly profitable. They consist, in fact, of a solution of the sulphate of copper so strong that the pitwork has all to be constructed of wood. When pumped to the surface they are stored in reservoirs and treated as required. The process may be thus described: The water runs continuously through a series of tanks or pits containing old iron of all kinds, the number of tanks being increased or diminished according to quantity and strength of the water treated, the principal care being that the water shall not pass away before it is too poor to pay for the iron consumed. After a while the tanks are drained off and the precipitate thus obtained is dried and smelted. About 250 tons are annually produced.

The water having undergone this treatment flows into extensive reservoirs (some of them having an area of 8 or 10 acres), and in these deposits the article known as precipitated yellow ochre, a commodity of great mercantile value. This process is self-acting, and returns to the proprietors the old iron used in precipitating the copper in a form of far greater commercial value. Other articles are also produced. The water issuing from the lodes in former ages flowed out into a peaty plain of considerable extent, and there precipitated copper and bog ochre on a scale so extensive that when copper was high the peat was burnt in order to get its cupreous ashes, and even now the bog ochre is sold under the name of gas-purifying oxide, and is largely used for the purpose the name implies.

In looking over the list of sales made by the company we observe solder, and on seeking an explanation are told that the small quantity of solder used in forming the tin utensils, which, when condemned, are bought for the precipitation pits, is collected by young girls and sold to the company. It is a curious and ingenious industry, but it proves that the agents in charge of the mines are alive to the economic importance of not allowing anything to go to waste. Native ochre, purple slime, and other minerals of smaller value are also produced here in considerable quantities.

Outside the extensive sett which they hold the company have secured a paint mill in which wind is used as a power, for the purpose of preparing the finer kinds of ochre and colours for market. They have also a smelting works at Amlwch Port, in which they possess every convenience for smelting their ores, and the quays of the harbour and the roads leading thereto being also in their hands, nothing is wanting to render this establishment complete.

The proprietary may well be congratulated on the possession of a mine which contains all the elements of lasting prosperity, and we feel sure it cannot fail to prove a source of gratification to all who take an interest in mining to be made aware of this instance of deserved success.

LETTS'S POPULAR ATLAS.—The fourth part of this atlas, which has just been issued, contains maps of England and Wales (geological), of Africa, and of Germany and Austria. The first of these is founded on the map of the late Sir Roderick Murchison, and has been written up and completed by Mr. H. W. Bristow, F.R.S., the director of the Geological Survey of England and Wales, which is a sufficient guarantee for its reliability. The general map of Africa is certainly the cleanest of any of the series which has yet appeared, and is really an excellent specimen of printing; and that of Germany and Austria is also a very good one. The atlas will form a very useful work of reference.

THE DEEP LEVEL MINING COMPANY (LIMITED).

The prospectus has just been issued by Messrs. John Taylor and Sons of a company formed to purchase and work the well-known Deep Level Mines. The property, which is situated on the Halkyn Mountain, in Flintshire, is very extensive, and being in the centre of that celebrated mining field from which in former years such immense returns of lead ore were made, and from the appearance of the veins recently explored presents unusual prospects of success. The working of these mines has been suspended during the progress of the operations of the Halkyn District Mines Drainage Company, which was established, as many of our readers will be aware, about four years ago, under a special Act of Parliament, for the purpose of continuing the driving of the deep level, or great adit, southwards in order to unwater not only these but also other well-known mines in the district.

With this view the level has been extedded a distance of upwards of 1500 yards, and has now passed beyond the southern boundary of the Deep Level Company's sett. For about 800 yards it was driven upon the course of the Deep Level vein, and has opened up a great length of valuable ore in entirely virgin ground some distance to the south of all former workings. The level passes through the property at about 220 yards below the surface, and the importance of the discoveries recently made in unwrought ground at so great a depth when the character of the district is taken into consideration can hardly be too highly estimated. It is to open up as rapidly as possible these deposits of ore that the company is now formed, with ample capital to carry out the proposed works, and the results of the development of this fine property are looked to with confidence.

REPORT FROM CORNWALL.

June 10.—It is simply sickening week after week to have to write of falling standards, and to feel convinced that if trade had been left to itself and not been interfered with for the benefit of speculators, who thrive upon the losses of other people, matters would have a very different outlook. When that is said well nigh all is said, and a very unpleasant all it is. It is as fortunate as it is remarkable that under such circumstances confidence should continue almost unabated in the future—that future of prosperity for which we have been looking so long, and which most of us fondly hoped had at length arrived. Nothing but confidence, indeed, can save us from some great disaster; but while our mines continue to look so well as they now do, and while the colonial competition, which was not long ago so troublesome, continues to decline, and in the face of statistics which steadily improve, it would be the height of folly not to feel that the present depression is but a passing cloud, and one which must ere long break away. Perhaps it may have a more speedy issue than at present seems probable, for when markets are played with at times they are apt to play tricks in return. Monday's drop of 4s. was only what was anticipated, and it is impossible to say that we may not have a lower level yet. We hope that none of our readers who hold shares in good mines will be frightened out of their investments. To realise now would be the very worst thing they could do; would be doing exactly what our speculative jobbers desire. It is so easy to sell in haste and repent at leisure.

We are not surprised that our recent remarks upon the non-desirability of London offices for mines should have called forth alike comment and question. The point is one of very considerable importance, but there is no reason why we should be so severely logical as Mr. Ashmead appears to think is necessary. The question is not whether in all cases the management of mines should not be upon the mines themselves or in the immediate neighbourhood, but whether this should be the rule—and the rule to an extent that should require very strong arguments on the other side before it admitted of an exception. If it is good, *per se*, that a mine should have a London office, then, of course, it would be a desirable, indeed necessary, thing that all mines should have London offices. What we say is, that the circumstances of each particular case should decide, but that there are very good reasons why, as a rule, London offices are not in favour in Cornwall, and that the burthen of proving their necessity in any particular case must rest with their advocates. Granted that if meetings are held on mines—the proper place and the only place in the old cost-book concerns—outside shareholders would be put to considerable inconvenience, is there not something to be said on the other side? More damage has been done to mining by the ignorance or carelessness of shareholders than by any other cause. Granted that it does suit the convenience of the bulk of the shareholders in a particular mine (of course, we are only putting a hypothetical case) to have the meetings, &c., held in London, what guarantee have they that matters are as they are represented on the mine itself? When an account is held on the mine premises those who attend must have some evidence of the character of their concern, and that is no small matter to set against the inconvenience of a journey west, which we were careful to point out in these days of railways and telegraphs is by no means as important a drawback as it was. If a man really has any considerable stake in mining it is not putting too heavy a burden upon him to suggest that he should occasionally visit his own property, and for that there is no time like an account-day

But there is something more that needs be said, however unpleasant it may be. It is the swindles of mining more than its chances that have given it a bad name, and whatever might have been the case a quarter of a century since we are bold to say that mining swindles at the present day have their chief centre outside Cornwall, and live chiefly upon the credulity of people who never, or but rarely, visit the county. If the practice of holding meetings on mines had been universal, we venture to say that the investing public would have been hundreds of thousands better off than they are now, because they would have been able to see for themselves, to some extent at least, how far glowing statements in prospectuses and lavish promises at meetings, and wonderful reports were borne out by facts. Why, it is notorious that mines have been run up to a premium and been bolstered up as full of promise that have never had the stroke of a pick done upon them from the moment they were launched by outside speculators, to the sore discomfort of a too confiding public. We do not intend to mention any names, but it is not so many years since we inquired, for a special purpose, into the actual condition of many of the mines that then regularly appeared in the mining list, and found that scores of them were really nothing more than mere names; they had been, or were going to be, perhaps, but for the time, at any rate, they were in abeyance. Had it been the custom to hold regular local accounts it is difficult to see how shares of this kind could have been bolstered up and kept afloat as they were. Probably Mr. Ashmead will admit that however desirable London offices, &c., may be in many cases—and we are by no means disposed to be so severely logical as to argue to the contrary—there are very good reasons why in the direct interest of the adventurers, and not because of any personal local advantages, the rule should be the other way. We might press the line of argument we have indicated further, but anyone who is really acquainted with mining matters can do it for himself. A hint in such a case ought to be enough for anyone who can look back only a very few years.

We do not understand that "Capitalist" disapproves of our advocacy of "home smelting," at least in principle. Only he thinks the multiplication of smelting works would be "expensive, dangerous, and unsatisfactory." Expensive, however, it certainly would not be when taken as an item of the heavy costs which attend the working of all our large mines. The cost of a smelting plant for tin (copper would be quite another matter) would be, comparatively speaking, a mere trifle; and the expenditure would produce an ample return in the economising of the returning charges. Expensive the scheme could not be. What he means by terming it dangerous we are utterly at a loss to conceive. What special danger is there connected with smelting works? We grant him it would be unsatisfactory (very) to those who are interested in keeping up the present system. We fail on our part to see what advantage could be derived from "A Capitalist's" system of "tin warrants" that would not be equally and more easily attained by the mines sending "tin metal" into the market instead of "tin paper." It is curious how history repeats itself, and how true it is that there is nothing new under the sun. The original custom of the county was that each tinworks did its own smelting; and when that was done away with, and the smelting-house and the smelter, as distinct from the mine and the miner, became an institution, the practice that sprung up was precisely that which "A Capitalist" suggests—the payment of the miners "in kind instead of in money." We not say that these were precisely what we would call "tin warrants," though there are traces even of something of that sort in connection with the credits given by the metal merchants of the day; but for every proportion of black tin delivered the smelter had to return so much white metal, taking the difference for his pains. What we say is that this system was, probably, well suited to the times, and that it had this advantage over the system now current, that the miner went into the open market to sell his tin for himself; but we say further, that with the modern development of mining enterprise, and the enormous increase of the capital invested in any thriving concern, the addition of a smelting furnace to the plant of any well managed mine, instead of a burden will be an aid. Whatever ticketing may do, "to this complexion we must come at last."

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

June 10.—Coal is comparatively difficult to sell. The Cannock Chase people are offering forge sorts at 6s. 6d. per ton, and better quality fuel is abundant at 7s. 6d. per ton. Consequent upon the unprofitable state of the trade two collieries in the Cannock Chase district are, it transpired on 'Change at Birmingham this afternoon, about to change hands. Limestone is reduced in price, and 3s. 6d. per ton is now the official quotation for blast furnace sorts, and 3s. 3d. for agricultural and masonry sorts. The men's wages are being reduced 6d. per day at the quarries. Finished iron is dull, and new orders are small. Russia is the foreign buyer who just now displays most spirit, and that is partially because of the threatened increase in the tariff. Pig iron is in over abundant supply at late rates. In consequence of the resolution passed at the meering of blast furnace proprietors in Birmingham, to which I referred last week, the whole of the men in South Staffordshire and East Worcestershire have this week received notice of a 10 per cent. reduction in wages. I may add that it is the computation of one authority that the furnaces now blowing are only half the number in blast four months ago. I am not inclined, however, to think that the decrease in make has been so marked.

The employers and operatives in the iron trade receive with satisfaction the news that Mr. R. Chamberlain, Mayor of Birmingham, has accepted the office of President of the South Staffordshire Mill and Forge Wages Board in the place of the Right Hon. Joseph Chamberlain, M.P., President of the Board of Trade, resigned. Mr. R. Chamberlain will fix an early day for the Board to meet and discuss the sliding scale and wages question.

The strike of the Rowley colliers has terminated, the men having agreed to accept for cobbles 10d. per ton; coal, 1s.; slack, 4d.; fine ditto, 3d. per ton. The prices represent a reduction of 3d. per ton on cobbles and 1d. per ton on coal. Slack is paid for the same as before the strike commenced.

The colliers at Talke and Harecastle (North Staffordshire), who for about a month have been upon strike against a reduction of 10 per cent. have now returned to work. In other parts of North Staffordshire a similar reduction has been acceded to by the men without any opposition, and owing to the state of trade three or four pits have been laid idle, and about 200 men thrown out of work.

Messrs. Tangye Bros., of Cornwall Works, have been awarded at the Sydney Exhibition nine prize medals, including a special first prize and several first prizes for their various exhibits.

NEW SMOKE CONSUMER AND FUEL ECONOMISER.—To the long list of contrivances for consuming smoke and economising fuel there has recently been added an invention which in many respects promises to eclipse anything that has yet been produced. The apparatus is so comparatively simple, and the advantages which result from its operations are so many and so great, that the patent can scarcely fail to recommend itself to manufacturers, and to come very speedily into general use. Mr. David Jones, C.E., of John's Buildings, Ladywood, is the inventor of this new and much-needed improvement, and has lately been very actively engaged in fixing up the new apparatus in several large manufactories in the town, including the wire and metal rolling works of Messrs. Edelsten, Williams, and Company, George-street, Parade; Messrs. Green, Cadbury, and Richard's manufactory, in Great Hampton-street; and also that of the Britannia Nail Works, Lower Hospital-street. The contrivance is quite novel in several essential features, and its chief advantages are claimed to consist in the economy secured in the quantity and quality of the fuel employed, and the more complete and satisfactory manner in which the heat is generated and the smoke consumed. At least 50 per cent., it is said, is saved in the quantity of the fuel; and as for the quality the apparatus will permit of the most inferior fuel being consumed with surprisingly satisfactory results.

The apparatus is further designed to admit of a rapidity of heating which could not be ordinarily attained; and it is so constructed as to be applicable to all kinds of muffles, annealing furnaces, boilers, and the like. A steam and air blast is spread underneath the bars of the grate, keeping them perfectly clear and bright, and preventing the formation of clinkers. The oxygen is sent straight through the coals by the force of the blast, and retains the carbonic acid all through. There is a hollow bridge, with diagonal perforation in fire-clay material, and the smoke is driven through an over-thickness of charging and consumed. The inventor is able to introduce a steam and air blast through the doors, or at the side, or through the hollow bridge, according to the construction of the muffle or annealing-pot. He is also able to considerably reduce the space in the fire-grates now employed, and can regulate the draught as required. The special features of the invention are exceedingly ingenious, and are the result of the careful and oft-repeated experiments of a civil engineer who has devoted much attention to the subject. As the invention becomes better known there is little doubt that manufacturers will avail themselves of the great advantages it offers in dealing with a difficulty in their industrial operations which is often the source of much annoyance and loss.—*Birmingham Daily Post.*

REPORT FROM LINCOLNSHIRE.

June 10.—The production of pig during the present year shows a considerable increase over corresponding periods of previous years, advantage having been taken of the advance in the price of iron to put more furnaces in blast. Five more furnaces have been put in blast than there were at the commencement of last year, with a corresponding output of metal. The demand earlier on was tolerably brisk, but of late there has been less willingness to purchase, especially for forward delivery, so unsettled have been the markets; but there is a prevailing opinion that the existing price is not likely to be much if at all lower, and that the trade will become more settled. The Frodingham Company, having four furnaces close to the station, have been doing well. Some of the companies it may be said have been rather unfortunate, amongst them the Lincolnshire Iron Smelting Company, owing no doubt to the peculiarity of the ore and the construction of the furnaces; but there is some reason to believe that the increased price of pig since the commencement of the year will have placed them in a better position, and that instead of losing something like 7000*l.*, as in 1879, there will be a much larger balance on the other side, for Mr. Roseby and the other directors have certainly been most indefatigable in their efforts to make the works profitable. The two furnaces of the Redbourne Hill Iron Company were out for a very long time, but they have again been put in operation. At Appleby a large tonnage of pig has been propuced, under the able management of Mr. W. J. Roseby, one of the directors, who was the means of introducing into the district the fine ironstone mined near Lincoln, and which has acted so well in correcting the stone in the Frodingham district, which contains an unusually large quantity of lime, more indeed than is necessary for fluxing. A good deal of stone has been lying stacked, but it is understood to have been purchased some time since and left where it is by the purchaser. There is one great advantage in connection with the furnaces. The stone, or rather the greater part of it, is obtained quite close to them, and on the surface, but that from Lincoln has of course to be brought by railway. In addition to the local consumption of stone, a considerable area is worked by companies whose furnaces are in other districts. The West Yorkshire Iron and Coal Company, who have five furnaces at Ardsley, near Leeds, get nearly all they use from Claxby, whilst the Parkgate Company, who have three furnaces near to Masbro', also raise a large tonnage near to Brigg. A good deal from the glebe lands is also sent into Derbyshire, and the Tinsley Company, near Sheffield, for some time have been working it on their own account on land leased from Mr. R. Winn, M.P., who is the owner of the stone in the Frodingham district, and which extends a long way. The latter also works the ore himself, and through his engineer and agent, Mr. J. Roseby (who first discovered the ore and made its value known), sends it into several iron making districts, there being direct railway communication to all parts.

THE TRADE OF THE TYNE AND WEAR.

June 9.—The steam coal works have been fairly employed this week; and as the supply of tonnage is good, for both steamers and sailing vessels, most of the works are expected to be well employed during this week. The general trade of the Tyne Dock shows considerable increase; the exports of iron, both pig and bar, fire-bricks, and other fire-clay goods and chemicals, are large. The shipment of house coal from Sunderland and the Tyne has improved, the demand having increased coastwise and foreign, and there has been a slight improvement in the price of this coal also in the Thames. Second-class steam collieries in Durham and Northumberland are fairly well employed. The demand for coke and coal for the Baltic continues. Manufacturing and small coals are also in fair request. The gas coal works in Durham continue to be well employed, as most of the produce of those pits are sent to supply contracts entered into some time ago. There is not much change in the coke trade; a considerable business continues to be done. Of course a good deal goes to supply existing contracts, and comparatively only a small quantity is offered for sale at present, but for this rates still recede, and it can be got for 10s. 6d. per ton, delivered at the furnaces. Although a large business is being done, many collieries at the present time are working at a loss; in some cases the loss is from 6d. to 8d. per ton. The iron shipbuilding trade continues very brisk, and consequently the marine engine and boiler works are many of them in full employment. All the large shipyards on the Tyne are well supplied with orders, at Jarrow, Wellington, Wallsend, &c. The Midland Railway Company have allotted a large order for locomotives; part of the engines are for passenger traffic and part for goods traffic. The amount of the order is from 60,000*l.* to 70,000*l.* Half of the engines are to be constructed by a Tyneside firm and half by a Glasgow firm. It appears that the directors of the Midland Railway Company expect increased traffic, and also have taken advantage of the low price of iron and steel at the present time, and probably anticipate an early rise in the value of these articles.

We learn from Brown's List that the exports from the Tyne in last month of coke and coal amounted to 642,039 tons, against 494,140 tons in May, 1879. And from the Wear the exports were in May last 271,511 tons, against 157,204 tons in May, 1879, thus showing a very considerable increase. The North-Eastern Railway returns show that a lull has taken place in the advance. For the week ending June 5 the increase was 8780*l.* compared with the same week in 1879. This is the smallest increase which has occurred this half-year. There was, indeed, a decrease in some items, the increase on the mineral traffic having been 9472*l.* The prospects of the chemical trade have at length improved, prices have for a long period been very low, although there has been a large trade, and no stocks of consequence, but the bottom has it appears been reached, and manufacturers having no stocks to fall back upon have been obliged lately to refuse orders. It is, therefore, expected that a substantial rise in prices will take place, as orders are coming in from abroad especially.

The iron trade shows a little more life, but quotations have changed a little. No. 3 is still quoted at the very low rate of 36s. net, with forge and foundry iron No. 4 at the same rates. Messrs. Connal and Co. report that they hold 85,600 tons of Cleveland iron, or an increase of 1600 tons on the week. Their warrants are freely bought at 37s. 6d. by persons who intend to hold the iron for a time. The question of railway rates is once more of paramount importance to the ironmasters as prices have fallen so low. They regard with apprehension the carrying out of the arrangements made in December last with respect to the repeal of the rebate on the carriage of iron-making materials. At the end of this month the second 5 per cent. of the 15 per cent. rebate allowed prior to the end of last year is to be abolished. Representations have already been made to the railway company with a view of inducing the directors to maintain the rebate as it stands at present, or to return to the old 15 per cent. The ironmasters stand more in need of this relief than they did at the end of 1878, for not only are selling prices lower, but the cost of production is greater. Ironfounders are receiving more orders. The demand for finished iron is poor, and prices are declining. Shipplates are now quoted at 6*l.* 5s.; angles, 5*l.* 7s. 6d.; and common bars can be got for 5*l.* 5s.

At Middlesborough, on Tuesday, there was an average gathering, and more enquiry for warrants. Pig-iron is going into store at the rate of 300 to 400 tons per day. Makers are beginning to offer iron in certain instances, but they ask higher prices than merchants generally, about 1s. per ton more. Deliveries for foreign and coastwise ports have been very considerable. For the week ending Saturday they were 20,320 tons. There has been an increasing tonnage sent to Germany, the Baltic, and Belgian ports, and last week 5000 tons were sent to Scotland. There is a larger quantity of finished iron and steel being shipped. America is taking a considerable quantity of steel blooms, and iron rails are being shipped to the order of the Government for Afghanistan. In certain cases there are purchases of iron made to go into store for investment. The tone of the market is improved. The productive power, however, is enormous, and unless there is a great improvement soon some blast furnaces will certainly be blown out. The shipments of iron last week from the Tees amounted to 22,329 tons pig-iron, and 7658 tons manufactured iron,

The Greenhurth Lead Company is in course of reconstruction. It was formed in 1874, and is now being voluntarily wound up. The object of the company is mining in the county of Durham and elsewhere. It was registered on the 25th ultimo. Capital 6400*l.*, in 1*l.* shares.

The Northern Institute of Mining and Mechanical Engineers' meeting, which ought to have been held on Saturday, has been postponed until the 19th inst. on account of some special business expected to be brought forward on that day. The progress of the Institute during the past few years has been remarkable. When it was formed 30 years ago the members were almost exclusively practical viewers and mining engineers, and many useful and valuable papers were contributed by those members generally on practical subjects connected with mine engineering. Mr. Nicholas Wood, the first president, contributed many valuable papers, as did also Mr. T. J. Taylor, Mr. Greenwell, Mr. Atkinson, and others, the paper of the latter gentleman on "The Theory of Ventilation" being amongst the most remarkable. Mr. Wood's Furnace and Steam Jet proved also to be a very useful paper; this was written on account of the introduction of the steam jet for mine ventilation by the late Mr. J. E. Forster. Mr. Wood proved that the steam jet was not capable of supplanting the furnace for ventilating mines. Subsequently the Lemielle Mechanical Ventilator was introduced to the notice of the members of the Institute, and a few of those machines were erected and worked at Washington and other places in Durham, but ultimately the Guibal Ventilator was introduced, and it is now worked at many mines, and it has been proved to be vastly superior to the furnace in every respect, and at present it is likely to supersede all other modes of ventilating mines. A few years ago mechanical engineers were admitted as members of the Institute, and since that time many useful papers have been contributed bearing on the economical working of winding and other engines employed in mining. Improved engines have in some cases been introduced, notably by Mr. Daglish at Silksworth, and other places; but there is yet a wide field for improvement in this respect at collieries. The members of the Institute at present have the advantage of the experience and knowledge of mining and mechanical engineers, and also have the assistance of the professors at the college at Newcastle, and in discussions on intricate subjects connected with mine ventilation, pumping, and other subjects connected with mining the assistance of those scientific men has often proved of great service. Practical men are apt to sneer at men of science, considering that they are merely theorists, but without the aid of such men coal mining could never have attained the position it now holds, as we are indebted to the great chemist Sir Humphry Davy for the invention of the Davy lamp—the father of all safety-lamps. Of late many papers have been contributed by members of the Institute on various safety-lamps, and many ex-

perimenis have been conducted to test the value of these lamps. Miners have been accustomed to try for gas with those lamps, so as to test the mine for shot-firing—at best a rude test; and men of science have again come to the aid of the miner by inventing more precise and accurate tests. An instrument has been invented by Professor Forbes for this purpose, of which we give a short account. An instrument was invented for the same purpose a short time ago. This instrument was described in volume 27 of the Proceedings, and it is considered by some to be superior to that of Prof. Forbes. This instrument, even when carbonic acid was present, indicated one-fourth per cent. of marsh gas with unerring certainty. This is the invention of Mr. Liveing. Prof. Forbes' instrument depends upon a well-known principle in acoustics—that the sounds produced by the vibration of a tuning-fork placed over a column of air confined in a tube would become very much more audible when the column in the tube was of the length suited to the pitch of the note produced by the fork, and that the length of this column was influenced by the specific gravity and nature of the various gases which the tube might contain. A disc is attached to the instrument with a glass face, and a graduated scale round the circumference, so that a fixed index marks with great precision the exact length of the tube. The instrument may be taken in advance of a lamp in places where gas is expected in large quantities—a phosphorescent powder is placed in a cavity behind the graduated glass plate, so that readings can be taken in the dark. In this way it is possible to measure the proportion of fire-damp to about one-half per cent. of the volume of the mixture.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

June 10.—A strike is imminent at the Braichgoch Slate Quarry, Nantlle. A reduction of 2*s.* in 1*l.* is proposed by the owners, and the men cannot understand why, inasmuch as no reduction has been made in the prices of slates, and both the present make and the old stock of slates are moving off. In Nantlle Vale the stocks of slates are very large at some of the quarries. Advantage is being taken both of the quietude of trade and of the summer weather to clear the quarries of heavy falls of rubbish, to which almost every quarry in the valley has been subjected. Meanwhile the rubbish tips and the winding-gear are mounting higher and higher, like Longfellow's young traveller, and like him to come to grief some day, so far as the quarries are concerned. Then perhaps the quarry owners will seriously set about making a tramway to the sea.

In Cardigan an attempt is being made to resuscitate several mines on the great Hafan and Henfwich lode, and the work of opening up the Tynewydd Mine has been begun. The trial at Bryn-yr-arian, or rather Pensarn, has ceased for the present. Are the promoters quite sure that this point was the best on the property for the purpose? An attempt to win the Bryn-yr-corian lode in depth would if successful be a good success. Trials are about to be made on the adjoining Penpompren and Penybank properties, with a view to the re-working of the mines. The nice little set of dressing machinery at Talybont has a very idle and deserted look just at present.

The trials which have been going on at the Old Grosvenor Mine on Halkyn Mountain have also been abandoned. From the Deep Level Mine southward to Llandegla, mining operations are more active. The promoters and workers at these mines, "Enquirer" included, may be quite sure that I wish their enterprises all the success they themselves desire, even if I do sometimes strive to keep their enthusiasm within reasonable bounds. The Rhydalun group of mines have great historic interest, the great difficulty in the old days being water. Now that this difficulty will to a great extent be overcome, I trust the riches that were once inaccessible will be won. In the Llanrwst district the works at the Coed Mawr Mine are not proceeding rapidly, although it is a good work—the driving of the deep adit. One would like better reports from the group of the D'Eresbys, but we will hope that these will come in time. Work at the Alyn Tin-Plate Works, Mold, is to be limited for some time to every alternate week in consequence of the accumulation of stock.

The importance of adopting a more complete method of purifying water flowing from lead mines, either from lead compounds held in suspension or in solution, as pointed out in a recent letter in the Journal by Mr. E. Halse, is once more shown. It is stated that thousands of fish may be seen floating along the sides of the River Teify, between Tregaron and Lampeter. There is a small lead mine near Tregaron which is probably the cause of all this mischief, although, as is proved by the fall of a new bridge at Bangor, which also, owing to the lime in the mortar, killed immense quantities of fish, there are other means besides lead mines which are equally efficacious in killing fish.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

June 10.—Two fatalities calling for special mention have occurred at Swansea. In one case it was as to the death of David Jones, a smelter, employed at Messrs. Vivian's, Hafod Copper Works. It appeared that an explosion occurred in consequence, it is believed, of the ore not having time to cool before charging. The roof of the furnace was blown off, and the deceased met with a horrible death in the molten metal. It appeared that no one was in fault, but if any blame could be attached it would be to the unfortunate deceased himself, and the coroner's jury returned a verdict of "Accidental Death." One man has also been killed and three others injured by the falling of a stage at the Swansea Blast Company's works at Landore, but the occurrence was purely accidental. The Swansea Stipendiary has given his decision as to the summonses taken out by the Llansamlet Tin-Plate Company against some of their workmen, who took it into their heads to reduce the make on their own account. On account of the looseness in which an agreement with the men as to the quantity of boxes to be turned out was made the Stipendiary dismissed the summonses, but in the course of his decision said—"But although I entertain these legal doubts about the contract I would not on any account be understood to approve in the slightest degree of the action taken by the tinmen in this matter. On the contrary, I consider their conduct to be illegal and unjust, and I have carefully deliberated whether I could under the statute take any other action to correct and redress their conduct. It is evident that the tinmen have resolved to take a line of their own, and force on their employer an alteration of the work without first obtaining his consent. I beg them to understand that they cannot do this lawfully. By so doing they break up all legal relations with their employer. Morally it is wrong, because I am sure they are not doing as they would be done by. Legally it is wrong, because no man can dictate a contract or any item in it to me or anyone else." Notices to terminate contracts have been given at the Llansamlet works, and others in the district—at any rate, the western portion.

A second seam of coal has been struck at the Pen Lan Colliery, Maesteg. The company consists of Messrs. Thomas, Ellis, and Evans, of Cardiff. The coal found is said to be good for coking.

It is well known that the Iron Trade has lately again been passing through a period of depression, although it is evident that this district has not to some extent suffered as others have done. Quotations, it is believed, have reached their lowest, and as a matter of fact, the works are not so badly off for orders as some suppose. It is believed that business may yet be done with America, and that better prices will soon accrue. As it is, it is no use disguising the fact that present orders are being rapidly worked out, although clearances are very large, being mainly for across the Atlantic. In the vicinity of the Alexandra Dock, Newport, are tons of crop-ends, scrap-iron, and other materials, awaiting shipment. Prices are rather firmer this week for rails, and bars are in best request on local account. At the Llandaff College Works a re-start is to be made, the men, it is said, resuming work at a reduction of from 10 to 15 per cent. in wages. At Briton Ferry a notice to terminate contracts has been given.

Tin-plates are in rather slow request, and prices have again gone down. Either a restriction of make or lower wages will undoubtedly be evidently the rule soon.

The coal industry has been quite as active as usual. As a rule, the collieries are working steadily; but, unfortunately, the Fowler's Marine Rondda Colliery has recently come to a stoppage. It is situated near Pontypridd. The workmen have all been discharged. There is no change to note in prices, but these are firmer. The enquiry for steam qualities has been fully up to the average. House are moderately good. Patent fuel is somewhat quiet, but shipments are larger.

CARDIFF AND SWANSEA STEAM COAL COMPANY.—In a previous number reference is made to the discovery of a new seam of excellent steam coal in the Resolven Colliery, which will add greatly to the value of this company's property. In addition to this, it is expected that, consequent upon a resolution passed at the last annual meeting of the company, a material modification will be made in the original terms of purchase, and the result will be that, with a very slight improvement in the coal trade, the shareholders will be in receipt of fair dividends.

With regard to the Tin-Plate Trade, a Parliamentary return has just come to hand which supplies some valauble information on that and other industries. We refer to the "Accounts relating to the trade and navigation of the United Kingdom." From this we learn that the exports in tin-plates for the month ended May 31 amounted to 17,588 tons, valued at 396,361*l.* At the end of May, 1879, the month's exports amounted to 16,532 tons, valued at 293,260*l.*; while the same month in 1878 yielded 13,608 tons, valued at 240,884*l.* The increase in the tin-plate exports may be still more fully shown by the fact that for the five months ended May 31, 1878, they amounted to 61,315 tons (value 1,129,894); at the end of the corresponding period of 1879 they amounted to 74,310 tons (value 1,303,695*l.*), while this year they rose to 85,744 tons (value 1,989,775*l.*) The United States and next to it British North America are the largest purchasers. These are interesting facts which speak for themselves, but what we have do with among ourselves is the dispute and the present condition of the trade. Whenever wages rise they draw labour to them. There is always a rush of hands to a thriving industry, and in course of time there are too many labourers on the field. How then, must we deal with this? Various replies are given, but in the case of the tin-plate trade we find a large number going in for diminished out-put. Now let us endeavour fairly to understand what this means. We believe it is capable of only one interpretation, whether the stagnatiou in the trade be due to a glutted market, a diminishing demand, or an overflow of labour. To lessen the output cannot increase the demand, but will more probably diminish it by raising the price. If the market be glutted, may that not indicate that too many hands have been drawn into the trade, and that means must be taken to stop any furtherapplications? If wages be forced upand kept above their natural level more hands still will be tempted to present themselves, and the evil will be greatly exaggerated. Those who have recourse to artificial means for keeping up wages commit two mistakes—they create too large an influx of labour, and they raise prices all round. It is too often forgotten that while 20 shillings will always be worth 1*l.*, the value of a shilling varies. When butcher-meat averaged 6*d.* per pound for the best joints, one shilling had a far greater purchasing power than it has now. To raise wages and at the same time to diminish their purchasing power is a foolish policy to pursue. We have seen too much of this in recent years, and, therefore, strongly urge upon all parties the necessity of proceeding in these trade disputes with great prudence and caution. We ask them especially to remember that supply and demand are regulated by a natural law, and that artificial adjustments will prove in the long run to be clumsy scaffoldings which have the evil reputation of coming down with a sudden crash, to the ruin and dismay of all who are standing upon them.—*South Wales Daily News*

REPORT FROM DERBYSHIRE AND YORKSHIRE.

June 10.—Operations in the lead mining districts of Derbyshire have been carried on much as usual, there being nothing new to note with respect to the mines, where everything is carried on in a quiet and unobtrusive manner. There are no new ventures to record, for speculation appears to be almost unknown. The Mining Institute, having its head quarters at Chesterfield, are about to have their annual excursion, and as the members purpose visiting the lead mine we may probably be more enlightened with respect to them than we are. The iron trade has become much quieter, and consumers still hold back from making heavy purchases in consequence of the unsettled state of the markets. Prices, however, are low, and such as can but pay a fair profit to makers, who last year must have done anything but well, at least during the first three quarters of it. In manufactured iron, also, less appears to be doing in girders and general merchant iron, so that the mills are rather quiet. Foundry material, too, is in but moderate request, builders' castings, which are usually in good request at this period of the year, not being much enquired for. Steel rails, however, appear to be in good demand, but like everything else connected with iron and steel, prices have come down, so that makers, instead of receiving 10*l.* 10*s.* a ton, as they did not so many months ago, are willing to accept 8*l.*, or rather less.

There has been a marked decline in the business doing in house coal for all the markets, so that the collieries are working short time as a rule, and this state of things is likely to continue if they do not get work. The London trade is as dull as it well can be, and the Midland Railway alone in May carried 5000 tons less than in the previous month; the London and North-Western 11,800 tons less; and the Great Western 17,000 tons less. Prices have been greatly in favour of the London consumer, for they have not been lower during the last ten years than they now are. Silkstone coal is delivered as low as 20*s.* a ton, so that the pit rate cannot be more than from 7*s.* to 7*s.* 6*d.* per ton, which cannot pay the colliery owner. The result is that at some places the men have been asked to submit to a reduction, and at one colliery the men refused, preferring to go on strike, and live on what they could beg from shopkeepers and others in preference. A strike is also likely to take place at Unstone, where one colliery has lately been closed, as it could not be made to pay. Steam coal goes off better, but the price at which it has to be sold leaves little if any profit. In other descriptions of coal there has been very little change, competition in all the markets being keen, and owners selling in many instances at a certain loss. The coke trade, however, is tolerably good, but there is a probability of that being overdone by increased production, and the erection of many new ovens. It is, however, at the present time the only branch of the coal trade that can be said to pay.

In Sheffield business appears to have become quieter, more especially in the lighter branches; but as yet this has not interfered with the working time. The rolling mills continue to be well employed, turning out the large quantities of ship and boiler plates, sheets, wire, bars, and merchant iron generally. Armour-plates of the latest pattern in iron and steel are likely to find a good deal of work for the patentees, as those made of iron are even now almost things of the past. Edge tools, sheep-shears, and light garden implements are being rather extensively turned out. For the best description of cutlery there is a steady demand, America being still a good customer, but for inferior qualities there is rather less doing. In files, saws, and similar goods there is a steady production. Bessemer rails keep the makers fully going, although there is not so much activity with respect to them as there was two or three months ago, now that prices have come down to what may be termed a tolerably moderate figure. Very little is being done in iron rails excepting for colliery purposes. At Parkgate an extensive contract has been obtained for locomotive plates, which has led to the starting of a new plate-mill, and the employment of about 40 new hands, and the putting in work of several more puddling-furnaces. Makers of crucible steel are now well supplied with orders for sheets, rods, spring steel, and that for the making of tools. There has been no change at the foundries, most of them being still comparatively quiet, whilst engineers are fairly off for work, as are wagon builders as well.

Colliery owners in the South Yorkshire district still complain of the unprofitable nature of the business they are doing, and which is not likely to improve. House coal cannot be sold at a profit in any of the markets, yet work has to be carried on, for the pits cannot be allowed to stand, owing to the damage that would be done, and to prevent which a considerable number of men would have to be kept constantly at work. They are averse to interfering with the wages of the miners, yet it is evident that something in that direction will shortly have to be done. They could sell a good deal of steam coal no doubt, but, as has been before pointed out, that would necessitate the exposing of vast quantities of "softs" to the weather at surface, so that the loss would not be balanced by the sale of the former. More attention is now being paid to the making of coke, for which there is a good demand, and new ovens are being put up in all directions, so that the production is likely to be considerably in excess of what will be required.

COATING METAL PLATES.—An improved process has been invented by Mr. HERBERT LE NEVE FOSTER, of Wandsworth, for removing the scale or oxide of iron from the surface of bar, plate, or sheet iron or steel, and also the scale or oxide from the surface of other metals. He claims also by his process not only the removing of the scale or oxide, but also to anneal or soften the metal by the one or same process. The improvements consist in passing carbonic oxide, cyanogen, sulphuretted hydrogen, hydrogen, carburetted hydrogen, or any compound of carbon and hydrogen in a gaseous or other form, or any mixture of the aforesaid compounds and element, over the bars or sheets, or plates enclosed in an air-tight vessel heated to a temperature sufficient to reduce the scale or oxide to a metallic condition.

SHORT NOTICES ON IRISH MINES.

BY WILLIAM THOMAS.

From the town of Bantry west for about six miles there is beyond doubt a valuable run of silver-lead lodes and copper lodes rich in silver. The formation of this district consists of clay-slate, elvan courses, quartz rocks, &c., and good roads pass through its entire extent. At Keilovinogue, Rooska, and Gurtyclova superficial excavations were made at surface on several of the lodes, and considerable quantities of silver-lead ore raised and sold. There is a large out crop of mundic, quartz, lead, and blende at Keilovinogue for 12 ft. or 15 ft. wide, and the ore dips west almost flat. Rooska is immediately adjoining to the east, where on the backs of the lodes there is silver-lead, mundic, and argentiferous copper ore. It is rather surprising, therefore, that these valuable lodes have only been opened about 10 fms. deep. Gurtyclova is still further east on the same line of lodes, and trials in this place about 6 fms. deep produced many tons of rich silver-lead ore. This district, as remarked in a former paper, is decidedly argentiferous, and in making the Bantry Extension Railway, which is now being carried out, two new parallel lodes to Gurtyclova have been discovered in a cutting 11 ft. deep; one is 18 ft. wide. containing similar black silver ore to the Lisheremig Silver Mine, with solid ribs and bunches of galena throughout. The other lode is 7 ft. wide, and has produced some really fine specimens of galena. There is is in this district a rich harvest in store for the *bona fide* speculator.

The Lisheremig Silver Mine was discovered in this district in making a new line of road, and is about two miles west from the town of Bantry. Specimens of exceedingly rich argentiferous dark grey copper ore were found on the back of one of the lodes, which by assay yielded between 300 and 400 ozs. of silver per ton of ore, and between 30 and 40 per cent. of pure copper. This lode is about 18 ft. wide, and contains also soft quartz, pyrites, black silver ore, &c. A short adit of 16 fms. will intersect this great lode, and by continuing it south other parallel lodes of silver-lead will be intersected. A good stream of water runs close by the mine.

The Dursey Head is opposite the Sheep's Head, and forms the north entrance to Bantry Bay. To the east of Dursey Head, near Ballydoveyan Bay, on the south shore of the Kenmare river, are the celebrated Berehaven Copper Mines, which justly rank with the best copper mines in Europe, and a fair price for copper would enable these splendid old mines to resume the payment of good dividends. At the Bantry Bay side, to the east of Castletown, Berehaven, on the property of Lord Charles Pelham Clinton, there is a large unexplored lode of quartz and copper ore, similar in character to the back of the lode in Berehaven Mines. Bere Island—also the property of Lord Clinton—is about six miles long, and forms a natural breakwater to the noble harbour of Castletown—Berehaven. This island contains several lodes, and at the western end there is a remarkable outcrop of quartz and micaceous iron ore. To the west of Bere Island, at Black Bull Head, veins of asbestos occur.

FOREIGN MINING AND METALLURGY.

There is nothing very striking to report in connection with the Belgian iron trade. The Roman Railway Company has let a contract for 200 trucks to the Saviglíano Workshops Company. We should scarcely notice this contract, but that it is stipulated that the iron used in building the trucks is to be obtained from Belgium. This is probably due to the fact that MM. Rolin and Co., of Brainele-Comte, are interested in these works. It is reported that the Belgian Railway Plant Company will shortly suspend operations at its Brussels workshops for the purpose of selling the land, which is of considerable value. The Rodange Ironworks, near Athens, in the Luxembourg, have realised a considerable saving by uniting its establishment to its mineral workings by a railway 1¼ mile in length, and worked by a cable. The delivery of the minerals required is effected by this means with very little labour.

The exports of iron mineral from Germany in the first quarter of this year amounted to 289,700 tons, as compared with 296,000 tons in the corresponding period of 1879. Merchants' iron was exported to the extent of 39,150 tons, against 25,500 tons; and rails to the extent of 57,900 tons, against 31,900 tons. Iron has been rather tending downwards upon the German markets; the fall has affected almost all descriptions.

Quotations for coal have been pretty well maintained in Belgium. In the Liége group work has been generally resumed on Mondays; some collieries have even increased their production, but this must be regarded as quite an exceptional circumstance. In the Couchant de Mons stocks are about an average, and even show a tendency to diminish. The same may be said of the Charleroi and Centre groups. Prices have not varied materially; they are now about 1*s.* 8*d.* per ton higher than they were in June, 1879. The interruption of the local navigations will probably impart a more quiet tone to business, but if the sugar season should prove a favourable one the winter will be approached under encouraging circumstances and conditions. The exports of coal from Germany in the first quarter of this year amounted to 176,690 tons, as compared with 139,776 tons in the corresponding period of 1879. Coke was exported to the extent of 84,700 tons, as compared with 58,700 tons. Coal was imported, on the other hand, into Germany in the first quarter of this year to the extent of 367,400 tons, as compared with 268,000 tons in the corresponding period of 1879. Coke was imported to the extent of 71,200 tons, as compared with 61,200 tons. Both the imports and the exports accordingly increased this year. Prices have been supported tolerably well in the German coal trade.

It is difficult, if not impossible, to establish a definite quotation for iron in the Haute-Marne Rolled iron from coke-made pig has been quoted, according to the works, at 9*l.* 4*s.* to 10*l.* per ton; under certain circumstances, 9*l.* per ton would probably be accepted for first-class. Machine iron has been maintained with a little more firmness. According to returns issued by the Committee of French Forgemasters, the imports of iron minerals into France in the first four months of the year amounted to 304,948 tons; the exports of iron mineral from France in the same period were 31,025 tons. These figures show little difference when compared with the corresponding returns for the corresponding period of 1879. In the first four months of this year France imported 57,504 tons of pig, 21,755 tons of iron, and 2301 tons of steel. Paris imported 6000 tons of iron more in the first quarter of this year than in the corresponding period of 1879; this fact is regarded as an indication of the prevalence of exceptional prosperity in the building trade of Paris. First-class merchants' iron has been quoted at Paris at 9*l.* 8*s.* per ton, and plates for construction purposes at 11*l.* 12*s.* to 12*l.* per ton.

We have already stated that a number of emigrants who had proceeded to the silver mines at Leadville, in Colorado, intended to return home, as they were dissatisfied with the wages paid, the number of labourers being in excess of the demand. According to a Colorado telegram, dated May 26, published in the New York Herald now to hand, the dissatisfaction of the miners had culminated in a great strike, which had thrown Leadville into a state of intense excitement; 5000 men are said to have left work. The strike began in the Chrysolite Mine, where the men asked for an advance from $3 50*c.* to $4 per day. The example was followed rapidly throughout the camp, and all the principal mines were speedily closed and an output of about $35,000 per day arrested. It is too early to assume that the dispute will have any appreciable influence upon the supply of silver for the market; but the incident is interesting as bearing upon the question of the cost of producing silver and the limit affixed thereby to the possible depreciation in the value of the metal.

Meetings of Public Companies.

HORNACHOS SILVER-LEAD MINING COMPANY.

The ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Monday,

Mr. ALEXANDER PARISOT (the Chairman) presiding.

Mr. W. BATTYE (the Secretary) read the notice calling the meeting; the report and accounts were taken as read.

The CHAIRMAN said: Gentlemen, from the notice which has been sent out you will see we propose holding two meetings on this occasion—the first our ordinary annual meeting, and the second an extraordinary meeting, to authorise the increase of the capital by the issue of new shares. I think it will be more convenient that I should deal with the whole question at once, leaving simply the formal resolution to be passed at the extraordinary general meeting. The directors' report, although very short, really embraces the principal points of interest to you, and we have supplemented the information contained in it by a very full report of Messrs. John Taylor and Sons, who had the mine examined only a few weeks ago by their chief engineer in Spain. I have also recently returned from the mines myself, so that I shall be able to answer from my own knowledge any question you may wish to put to me. The most important facts we should consider to-day are—first, the work done up to this date; secondly, the present position of the mines; and, thirdly, our prospects for the future. We are exceedingly disappointed at not being able to come before you and show a greater result as far as the returns of ore are concerned. We expected this time last year to have got into a flourishing condition by now. Although we have not yet arrived at that stage we have every reason to believe, and I am firmly convinced myself, that very little remains now to be done to bring the mines into a highly productive state, and to enable us in the course of a very little time to profit by what we have done. Our operations so far may be summed up thus. We have put up buildings and machinery on a very extensive and complete scale. All our machinery has been proved to work to the highest degree of perfection, and all our buildings and surface works are also of the very best description; and a large amount of underground work has been carried out in such a way as to fit the mines for very extensive operations later on. Of course, this has necessitated a large outlay of money and a great deal of labour, and, therefore, with so many things on hand we found it impossible hitherto to get the mines into such a state as to be making regular returns of ore. In fact, although we have sold over 1200 tons of ore, which realised a money value of nearly 40,000*l*., we do not consider these as regular returns, but merely as preliminary shipments, satisfactory only in so far as giving evidence of the existence of the ore in the mines, and also as conclusive evidence of the richness of the ore for silver. There is another cause which has contributed to diminish the production since the beginning of the year, and that is that some of the stopes in the 4th and 5th levels of the Descuidada Mine had diminished in productiveness. In fully developed mines there is always a large extent of stoping ground, so that if there is a falling off in one part there is compensation in another; but in our case we had not sufficient ground opened up, consequently we had nothing to fall back upon. In another accessible part of the mine we had an increase of blende and a diminution of galena, but this increase of blende we expect to disappear in depth, and we shall also have fresh ground opened out, where there are important bodies of ore, but which are not now accessible, in consequence of insufficient development. In the Afortunada Mine, on the other hand, we are still working at a very shallow depth. No ore ground has been stoped below the third level, only 40 fms. from surface, and, of course, at such a shallow depth it is scarcely to be expected that any large quantity of ore should be forthcoming. The next point I propose to allude to is our present position. I shall not require to detain you very long, as I think I can explain it in a very few words. We have all the surface works completed; and the machinery and buildings are also in a complete state at the present time. Our engine-shafts are being sunk at both mines, and several levels driven. At Descuidada, in the 3rd level south of engine-shaft, we have come upon what we believe to be a fresh and big column or shoot of ore, in which we have already driven more than 10 fms., and in the forebreast of the level there is 8 in. of solid mineral of the richest quality we have met with. When I was at the mine the assays have given us as much as 170 ozs. of silver to the ton. This discovery is in the new part of the mine, so that the whole of the ground is standing intact right up to the surface, and we shall now only require to extend the other levels—that is, the 1st and 2nd above the 3rd level, and the 4th, 5th, and 6th below the third level, so as to get stoping backs 75 fms. in height, thus giving us at once important reserves of ore ground, and enabling us to make regular shipments of ore. This discovery is entirely distinct from what we formerly considered the Descuidada Mine, which originally consisted of a column of ore north of the shaft, which was 100 metres long. It then became poorer in the 4th and 5th levels, but the 6th level is being extended, and we expect shortly to come under the portion which was rich in the upper floors. At Afortunada, I have already stated, we are at a very shallow depth. We are now sinking the shaft to the 5th floor; the 4th levels are only 50 fms. from surface, being the deepest part of the mine. It is important to note that it is also the richest part of the mine—that is to say, the mineralisation is improving as we go down in depth. The ore in this mine is richer than in Descuidada. From actual sales the average has been 150 to 160 ozs. per ton, but in the deepest levels the assays have produced as much as 260 ozs. to the ton of ore. Both as regards Descuidada and Afortunada Mines, a few months' working will suffice to lay open sufficient ground to make regular returns of good ore. I may add that all the engineers who have examined the mines have given it as their opinion that the Afortunada Mine will turn out by far the most important of the two, and will ultimately yield larger quantities of ore. At the same time, so far as immediate returns go, our position is this. If we attempt to force on shipments in large quantities, we shall have to delay the opening up of new ground, and, in fact, we shall have to postpone the moment we are all anxiously looking forward to, when we shall make regular shipments. As regards the future prospects, you will see that all that is wanted at the present moment is to lay out an additional sum of money in the underground works, so as to enable us to keep the dressing machinery in constant employment. Our dressing machinery is capable of getting through 50 tons per day, so that we shall be in a position of passing 100 tons of rough ore per day, and from actual experience we know that the rough mineral produces from 6 per cent. to 8 per cent. of pure mineral; therefore, if we can get the mines in the position of keeping the dressing machinery constantly employed, we should be producing at the rate of from 6 to 8 tons of mineral per day, or fully 200 tons per month. If once we obtain that result, our ore, being exceptionally rich in silver, we should be working at a profit of over 4000*l*. per month. We do not make any actual promise as to the time, nor do we say with certainty that that will be the production of the mines, but that is what we have been aiming at all along, and that is the production for which the dressing-floors have been laid out. The last question is the financial position of the company. We have been hampered all along by shortness of money. The directors have been under the necessity of advancing considerable sums for the requirements of the company, and we think the time has come to put the finances upon a thoroughly sound basis. That is the reason for our proposal to increase the capital by the issue of 5000 additional shares. The liabilities on Dec. 31 amounted to nearly 12,000*l*.; since then there has been five months' working costs incurred, which have been met to a great extent by advances from the directors, so that virtually the liabilities amount at this date to about 16,000*l*. This we propose to pay off, and to do away altogether with the debenture debt of the company, amounting to 10,000*l*. In addition to this, as you will have seen by Messrs. Taylor's report, we expect that a further expenditure will be needed of 10,000*l*. or 12,000*l*. for the underground works, so that altogether we do not see that it would be of any utility to increase the capital by a less amount, especially as, if we had the funds for it, we should strongly recommend that rock-drills be adopted for laying open the mines faster, by which means we should at least double or treble the rate of progress, and then, instead of our machinery having to wait for the underground works, the position would be reversed, and we should be opening out the ground faster even than our machinery could deal with the returns. At Descuidada we have had a very heavy increase of water, and in the event of any further increase we must be prepared to put up a pumping-engine, which would be also an outlay to be taken into account. Under these circumstances we think that any less sum than we propose would be hardly sufficient to put the company on a sound footing, and at the same time I may as well state that while we are anxious to obtain your consent and authority to the issue of this capital, we do not propose to press the shareholders to take up the shares. We shall leave that entirely to their discretion. We shall give the shareholders the preference over any outside applications; but the mines at present are in such a position that we shall have no difficulty in having the shares taken up. I think I have given you now as much information as I can, but I shall be glad to answer any questions which may be put to me. I beg to move that the directors' report and the audited balance sheet be received and adopted.

Mr. G. C. EDWARDS seconded the resolution. He considered that for a long time past the mines had been hampered for want of sufficient money, and he approved of the suggestion to issue more shares in order to put the mines in a profitable condition.

Mr. J. POUND agreed that it would be necessary to raise more money, but he complained that the promises held out had not been fulfilled, and that some change should be made in the management. He moved that the report and balance-sheet be sent back to the directors for reconsideration.

Mr. KINGSFORD also agreed that there should be some change in the supervision. He referred to the fact that the mines have been already reported upon by Messrs. John Taylor and Sons, and he thought they could not do better than take steps to place them under the management of that eminent firm. He believed this would do away with all unnecessary expense, and secure better administration. He moved an amendment to that effect.

A SHAREHOLDER seconded the amendment.

Mr. POUND said he would withdraw his amendment in favour of Mr. Kingsford's.

The CHAIRMAN said that as regarded the suggested change of management at the mines, he believed they could find no more competent man than their present manager, and that was the opinion of Messrs. John Taylor and Sons themselves. He could not see that any economy could be effected. The directors had come forward and assisted the company by putting their hands in their pockets without one scrap of security, for which they had never received any interest, though it had been credited in the accounts. The board had worked hard in the interests of the shareholders, and had had great difficulties to contend with in the past.

The CHAIRMAN, in reply to a SHAREHOLDER, said no negociations were pending for the sale of either of the two mines he had referred to. But in addition to those mines the company possessed nine other mines, and as soon as the directors got the two present mines into a dividend paying state they would devote some attention to opening up those other mines for the purposes of re-sale, and as they were very valuable they would recoup the company a great portion of the capital expended.

A SHAREHOLDER asked why the shares were not quoted on the Stock Exchange?

The CHAIRMAN said the directors had kept the subject in view, and the application was simply postponed till after the new shares were taken up.

After some further conversation the amendment was put in the following form: "That the report and accounts be not received, but that they be remitted back to the board, and that the directors be requested to place the management of the mines in Spain in the hands of Messrs. John Taylor and Sons."—This amendment was lost.

The original resolution for the adoption of the report and accounts was then put and carried.

The CHAIRMAN, in reply to Mr. POUND, who expressed an opinion that the salary of the engineer at the mines ought to be reduced, again bore testimony to the excellence of the management out there, and said that during the time the company had been somewhat pressed for money the engineer had waited for his salary as long as 18 months, and had allowed everyone else to be paid out there in preference to himself.

Mr. EDWARDS said that, as a large shareholder, he had come in contact with the directors, and knew they had been making very large sacrifices, and he thought the shareholders generally were very much indebted to the board for what they had done.

Mr. Alexander Parisot was then re-elected a director. Mr. James Russell Frewer, the other gentleman who retired from the board, did not offer himself for re-election.

The meeting was then made special, and the CHAIRMAN moved—

"That the capital of the company be increased from 100,000*l*. to 150,000*l*., by the creation of 5000 shares of 10*l*. each; payment in respect of the same to be made at the discretion of the directors, and all applications from existing shareholders to have preference over applications from non-shareholders, in accordance with the Articles of Association."

Mr. JAMES RUSSELL FREWER seconded the resolution, and said his retirement from the board was not caused by any want of confidence, for he believed the mines would under good management produce good dividends. He had withdrawn from the board because he did not agree with many portions of the policy of the directors. He disagreed from the large outlay upon machinery before fully developing the mines. He was also at issue with the directors as to the value of the management on the other side. At the same time new capital must be found for further developments, and, therefore, he seconded the proposition to increase the capital from 100,000*l*. to 150,000*l*. What they wanted to ensure was that the management on the other side was as good as on this. He also expressed a hope that so long a period would not in future elapse between the meeting of shareholders.

The CHAIRMAN said the directors had no objection whatever to half-yearly meetings. As regarded the change of management on the other side, Messrs. John Taylor and Sons themselves thought it would be unwise to make any change. The manager was a good man, and had worked hard, and he could not see that any good whatever would arise from any change. He said Mr. Frewer had never been out to the mines, and, therefore, only judged from correspondence.

The CHAIRMAN, in reply to a further question, said he did not think there would be any difficulty whatever in placing the further issue of shares.

The special resolution was then put to the meeting and carried.

On the motion of Mr. EDWARDS, seconded by Mr. POUND, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

LLANRWST LEAD MINING COMPANY.

A second extraordinary general meeting of shareholders was held at the offices of the company, Gracechurch-street, on Thursday, for the purpose of confirming the resolution passed at the previous meeting, held on the 20th ult. The chair was occupied by Mr. HELDEN. The notice calling the meeting was read by Mr. WILLIAM HENRY PYNE, the secretary.

The following is an extract from the circular calling the meeting:—

"I am requested to say that the directors most earnestly desire to impress upon the shareholders the necessity of their sending in applications for debenture stock forthwith, as the future prospects of the company must entirely depend on a sufficient sum being subscribed. As every shareholder will be materially benefited if the necessary amount is subscribed, I venture to ask you individually to contribute as much as you can, and I would the more strongly urge upon you the desirability of your now coming forward, by pointing out that the success of the mine depends only on the sinking of the main shaft, which would result in good profits, and that in the event of the debentures not being taken up those profits will be reaped by your successors. If a sufficient amount is forthcoming I have no doubt that at the end of six months the mine will become the great success that has always been predicted by experts. Provisional applications have already come in for 1000*l*. worth of debentures, but this amount will not be dealt with unless the further sum necessary is promised by the general body of shareholders. In the mine adjoining Llanrwst a good discovery has just been made in sinking below the 30, where a lode was cut into, and is yielding from 2 to 3 tons of lead per fathom; this is one of the Llanrwst lodes, which must also be cut when the shaft is sunk a few fathoms deeper."

The CHAIRMAN said he regretted that in the absence of Captain Gilbert, who had been the Chairman since the formation of the company, it devolved upon him to preside, he being the only original director left. The only business they really had to transact to-day was to confirm the resolution passed at the previous meeting. When that was done they might discuss in a cursory way what had been accomplished. He concluded by moving the confirmation of the resolution.

Mr. VIVIES seconded the resolution, and asked what amount would be raised, and would it exceed 6000*l*.?—Mr. ALFRED ENDEAN said the resolution specified not to exceed 10,000*l*. He went on to read a letter from Capt. Knapp, addressed to him privately, and received that morning, in which Capt. Knapp stated that he was on the mine from from six in the morning till 10·30 at night, and often had to do his correspondence on Sundays, his time being so much engaged. They had sampled that very day a quantity of lead, computed at 50 tons. The engine-shaft was now in course of sinking by nine men, and Capt. Knapp concluded his communication by expressing his surprise that applications for the debentures were coming in so slowly. He (Mr. Alfred Endean) went on to say it was a good sign that Capt. Knapp had taken 100*l*. worth of debentures himself. Captain Knapp was most industrious, and it would be madness to throw away a mine which was making such good returns of lead.

A SHAREHOLDER asked what amount had already been subscribed?

The SECRETARY said 1600*l*., on condition that the whole of the shareholders would come forward. The deposit money paid was 54*l*.

The CHAIRMAN said he thought they could go on with 4000*l*.

Mr. ENDEAN said he would be inclined to do more himself if the shareholders came forward. They would never want any more money if they got the amount now asked for, which would place the mine in a position not second even to Van. They could double the returns when they got the shaft down to the next level, but the sinking of the shaft meanwhile would take some five months, and cost about 100*l*. per month, irrespective of the other charges, and there were also liabilities to merchants to clear off. He agreed with the Chairman that he thought not more than 4000*l*. would be wanted.

The resolution was then put and carried, and a vote of thanks having been passed to the Chairman, the meeting broke up.

FORTESCUE (STANNAGWYN) TIN AND COPPER MINE.

The first ordinary general meeting was held on the mine on June 4, Mr. WILLIAM THOMPSON in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said that this was simply the statutory meeting, held for the purpose of complying with the Companies' Act, and not for the transaction of any ordinary business. He regretted that they had not been able to get a quorum, but there are, perhaps, two reasons why more shareholders did not attend. He hoped the first was that a generous confidence was placed in the agents and management, and beyond that it is a long journey for most of the shareholders, the majority living in London or far beyond it. The reason he convened the meeting on the mine was to enable those who attended to judge for themselves, and he was certain that they would agree with him that great energy had been displayed in carrying on the surface works, and had they followed him and Capt. James through the underground workings they would have been still more pleased. He was delighted with the underground prospects. It was only a matter of £ s. d. to erect engines and buildings, but no influence they could possibly bring to bear could make a good mine if it be not already there. He could corroborate the agents' report, for he had carefully gone over every point. The agents' report spoke volumes for the future, and any questions the shareholders might wish to ask he would be happy to answer.

The report of the agents (Captains J. H. James and H. B. Harris) described the works, both at surface and underground, of this mine since they commenced operations in January. As to the roadway, it was found impracticable to bring on an engine to the mine with heavy material in the state they found the surface, it being of peat and gorse. They have subsequently completed a very good and substantial road, 120 fms. from the turnpike road, to the engine-house and offices at a very small cost. They have also completed the account-house, smith's shop, material and resident agent's house; also the powder magazine. These are in a very complete state. The engine-house, stack, stands, and loadings are completed, and in the course of a few days the boiler will be fixed and the house finished. No time has been lost in the prosecution of these works. They have likewise cleared the adit level about 110 fms., cleaned up and secured the engine-shaft 25 fms. from surface. In the stopes west of engine-shaft the lode is over 30 ft. wide, producing very rich work for tin, copper, silver, and arsenic, samples of which have been assayed. The stopes east of the shaft are over 25 ft. wide, producing the same class of lodestuff. Other lodes in the sett produce tin from the backs, and which they propose to intersect by cross-cuts in the deeper levels; and these lodes they have reason to think will be found highly productive. The 16 heads of stamps, when completed, ought to crush 1 ton of ore per diem each—that is, 384 tons a month for the 16 heads, yielding, according to assay, an average thus:—Tin, at 15 lbs. per ton, 117*l*.; copper, 38 tons, 291*l*.; silver, 9 oz. per ton, at 4s., 691*l*.; arsenic, 10 tons, 50*l*. = 1149*l*. From which must be deducted the labour costs, &c., per month, 250*l*., leaving net profit per month, 899*l*., which on the company's small capital would give enormous dividends. In clearing up the adit and opening the stopes they have previously reported on the great amount of reserves in sight. They would be glad to take any of the shareholders or their agents through the mine on the day of the meeting.

In reply to a shareholder as to the future prospects of the tin trade, the CHAIRMAN said that he regretted exceedingly that so important an industry to Cornwall as tin mining should be subject to the caprice and will of speculators and tin smelters. He had hoped after so many years of sad depression they would have come out of the fire a little purified, but it seemed not. He was of opinion that until a severe opposition be started against the smelting rings, which is nothing more or less than a monopoly, the mining interests will always suffer. In this mine, however, he thought, although he felt deeply disgusted with the smelters, the price of tin would not materially affect the profits of this mine, for if they looked at the products of the lode they would find silver and copper preponderate. Captain Harris said he was here 29 years ago this June, and the mine was worked by local people for copper alone. He had then many times begged them to put up steam-power for stamping the lodestuff, and had they done so they would have had a good mine. The shares were then only 5s. paid-up, and they realised 7*l*. each, at which price he sold them himself, and but for a peculiar circumstance that the leading party connected with the mine suddenly left England—the reason for which was well known in the county—he thoroughly believed the mine would have proved to have been one of the richest in Cornwall. He was pleased now, however, to see such determination on the part of the company to thoroughly develope what he always considered a very valuable property.

Captain JAMES said the last parties working the mine had to cart the ore five miles to get it stamped, and yet they made it pay.

The CHAIRMAN said from what he saw he felt sure he should at the next meeting have the pleasure of declaring a dividend.

The usual vote of thanks to the Chairman terminated the proceedings.

WHEAL JANE MINING COMPANY.

A general meeting of adventurers was held at the offices of Mr. Granville Sharp, Queen Victoria-street, on Thursday, for auditing the accounts for the four months to the end of March last, to receive the manager's report, to consider a letter from Lord Falmouth's agent as to the future working of the mine, and to pass resolutions thereon,—Mr. JOHN HOCKING, jun. (the purser) in the chair.

The accounts showed that the profit on the four months' working amounted to 208*l*. 0s. 9d., and the present balance against the mine was 1907*l*. 2s. 4d. The balance against the adventurers at the last account was 3628*l*. 18s. 3d.

The CHAIRMAN said that on the whole he thought that they must consider the accounts satisfactory. Had they had the same price for tin as in the corresponding period of last year it would have brought the profit for the past four months to nearly 900*l*. Amongst the liabilities they had charged arrears of minimum rents due to Messrs. Rodd and Tremayne, 40*l*., and, ditto, to Mr. Rashleigh, 30*l*.; those were four years arrears, which Capt. Southey and himself were ignorant of the company being liable for until it had been allowed to accumulate to the amount mentioned. The amount due on forfeited shares was 75*l*. 10s., and against that there were 31 shares belonging to the adventurers. The bills receivable amounted, at the date of the accounts, to 215s. 7s. 8d., of which 150*l*. had been paid since the accounts were made up. Of the calls unpaid (189*l*.), 20*l*. had been paid since the accounts were made up.

On the motion of Col. PERCIVAL, seconded by Mr. GOULD SHARP, a financial statement for the four months was received and adopted.

Capt. SOUTHEY then read his report, as follows:—

June 9.—Since the last general meeting we have reached the north wall of the lode at the deep adit level, which was found to be 22 fathoms wide, and worth for the part carried 10*l*. per fathom. This piece of ground is standing intact to the shallow adit level 20 fms. high. About 15 fms. west of the point where the lode is cut through a stope is being worked in the back of the level, which is producing tinstuff of good quality, and improving as we are approaching the north wall of the lode. At Gilbert's shaft, at the deep adit level, a cross-cut is being extended south to intersect Ready Money lode; the cross-cut is now advanced 11½ fms., and in another 6 ft. driving we expect to meet with it. We may state that this lode produced large quantities of tin in the western part of the mine, and judging from the congenial character of the stratum now passing through we expect to meet with something important. At the Tremayne adit we have holed the rise in the back with winze sunk in the bottom of the shallow adit; this has given us good ventilation, and opened up a profitable section of ground, which is now being stoped; lode worth 20*l*. per fathom. At the shallow adit level a section of ground is being stoped, producing good quality tinstuff. At the dressing-floors we have erected one of Gwynne's centrifugal pumps; sufficient water is now obtainable for all dressing purposes. We are now preparing to lay down new frames for the more economical treatment of our slimes. During the past four months we have raised and sold 57 tons 13 cwts. of tin, and have increased our stock of tin on the calcining-floors 4 tons. This arose from the tinstuff containing a higher percentage of mundic than heretofore; seeing this will increase we would recommend the erection of a new clean burning oven forthwith, which will enable us to increase our returns, and at the same time more effectually calcine the tin. We estimate the cost of this to be about 100*l*. In conclusion, we beg to state we have a large quantity of tin ground laid open, which can be taken away at a good profit under the present mode of working.—R. SOUTHEY, J. ROWE.

Mr. GOULD SHARP asked when the calciner would be finished?—Captain SOUTHEY: In about three months. I may mention that we have reduced our returning charges from 75*l*. per month to 40*l*. per month.

The CHAIRMAN, in reply to Mr. GOULD SHARP, said that tin was now 11*l*. per ton lower than at the date of the previous meeting, which would make a difference of about 640*l*. in the profits.

Capt. SOUTHEY, in reply to Mr. GOULD SHARP, said the monthly cost would not increase. He did not think the returns of tin would be less than 60 tons per month.

On the motion of Mr. BLACKWELL, seconded by Mr. PAYNE, the manager's report was received and adopted.

A resolution was then passed leaving it to the discretion of the committee to deal as they thought proper with the forfeited shares.

The CHAIRMAN said that in March last the committee received a letter from Lord Falmouth's agent requesting the company to work the lower and deeper levels, but he (the Chairman) had seen the agent, who had consented to allow the company to work the mine as at present till August next.

After a short conversation, a resolution was passed authorising the committee to make the best arrangement they could with the lord.

A resolution was then passed authorising the Chairman to take the necessary legal steps to recover the arrears of calls.

A vote of thanks to the Chairman and committee closed the proceedings.

WEST CHIVERTON MINING COMPANY.

An ordinary general meeting of adventurers was held at the offices of the company, Queen Victoria-street, on Thursday,

Mr. GRANVILLE SHARP in the chair.

The CHAIRMAN read the notice convening the meeting.

In reply to a question, the CHAIRMAN said Mr. Thomas Smith (who usually presided at their meetings) had sold his shares in this and some other undertakings; and Mr. West, the largest shareholder in the mine, and the only other member of the committee, was unable to be present at the meeting, owing to his absence from town. He held Mr. West's proxy for 310 shares. As purser it was his duty to take the chair in the absence of any member of the committee; but it any gentleman would relieve him of the responsibility he would be happy to vacate the chair.

It was resolved that Mr. Sharp should preside over the meeting. The minutes of the last meeting were read and confirmed, and the 20 weeks' accounts, showing a balance of assets over liabilities of 865*l*. 13s. 6d., were taken as read.

The CHAIRMAN reminded the shareholders that at the previous meeting a resolutions was passed to the effect that the materials should be drawn up from below the 80 fm. level forthwith. Before doing that they had to consult with the lords of the mine, and he was sorry to say that some of the lords would not sanction the carrying out of the resolution until they had the mine inspected by their own agent. This step, he regretted to say, had entailed nearly a month's unnecessary cost. Capt. Southey was one of the agents of the mine, and it was naturally concluded that his report would have been adopted by the other lords, and two of those gentlemen were thoroughly satisfied with it, and were willing that the resolution should be carried out; but the others held out, and they were obliged to keep the engine at work, otherwise the water would have got in, and the lord could have compelled them to put the mine in fork, so that it might be inspected. This had, of course, made the costs heavier

Mr. W. H. SHARP asked if they could not make a claim against the lords for this unnecessary expenditure?—The CHAIRMAN replied that the covenant allowed them to make an inspection. The inspection was made by Capt. Josiah Thomas, of Dolcoath, and the report given to the lords by Capt. Thomas entirely endorsed Capt. Southey's previously expressed.

Mr. W. H. SHARP thought the adventurers had a moral claim against the lords for this extra month's cost, and he hoped it would be deducted from the dues.

Mr. BURT asked if it would be necessary to make a call at this meeting?

Capt. SOUTHEY said he had already stated his opinion that by adopting the present limited mode of operations they would not require any further calls, and he still adhered to that opinion. They had plenty of mineral and plenty of plant to meet all the expense of proving the piece of ground that they were now prosecuting work upon. Of course he had not anticipated that the lords would have taken the course they had, involving such an expenditure, though he was glad that his opinion had been endorsed.

A SHAREHOLDER asked if there was any chance of a dividend?—Captain SOUTHEY replied that they must wait to see the result of the cross-cut, but their chances were, he thought, greatly in favour of their finding a good lode, and that West Chiverton would again be the mine that it had been. The trial was certainly worth making, and if it should turn out satisfactorily they had more than enough mineral and plant on hand to pay all the costs of making the trial. He believed they had now about 10 fms. to drive to intersect the lode at a point where it was expected that a good discovery would be made. The lode in the present driving was 4 ft. wide, and the driving cost 9*l*. per fathom. A great deal depended on the underlie of the lode between the 20 and surface.

A SHAREHOLDER asked if the materials raised had been offered for sale?

The CHAIRMAN, in reply, said 200 lots had been sold by public auction, and realised 900*l*., and the remaining part were now being weighed and prepared for sale.

Captain SOUTHEY, in reply to a question, said very little dressing had been done, as they had only within the last few weeks got the water necessary for dressing. They had thousands of tons of stuff ready for dressing, but it was a question whether it would be good policy to sell much ore while prices were so low.

In reply to Mr. GREENARCH, Mr. HOCKING said that the item of carriage included every item coming under that head, such as coals, and the conveyance of materials; for instance, in one month the carriage amounted to 90*l*., and out of that only 24*l*. related to the conveyance of ore.

The CHAIRMAN having explained two or three of the items in the accounts, Mr. HOFFGAARD said he considered that the accounts were of a most unsatisfactory character, and were very confusing, and he proposed that they should not be adopted, but that a committee of investigation should be appointed to examine them and report to a future meeting.—Mr. GREENARCH seconded the proposition.

The CHAIRMAN said the accounts had been made up in the usual way, and they had been audited by Mr. F. Warwick, a well-known public accountant. Any shareholder could come to the office and see every item for himself.

Mr. BURT, thoroughly believing in the accuracy of the accounts, proposed their adoption. He had examined the books for himself, as any other shareholder could do.—Mr. GILLING seconded the proposition. A poll was taken, which resulted in the holders of 230 shares being in favour of passing the accounts (Capt. Josiah Thomas by proxy for 310 shares in the hands of the Chairman), and 137 in favour of Mr. Hoffgaard's proposition. The accounts were, therefore, passed.

Capt. SOUTHEY, in reply to questions, said the costs to be paid on Saturday would amount to 240*l.*, and every promise he had made with regard to keeping the costs at the lowest amount possible would be fulfilled. He could not do more than he was doing if the mine were his own property. (Hear, hear.) He would send a report from the mine each month, and a special report whenever any important discovery should be made. It would probably take about fifteen weeks to reach the point in the lode at which they were aiming by the driving of the cross-cut.

Mr. LOVELAND, who had lately visited the mine, said he had carefully gone over the workings with Capt. Southey, who was he believed doing all he possibly could for the adventurers.

The report was, on the motion of the CHAIRMAN, seconded by Mr. BURT, adopted; and ordered to be printed and circulated amongst the shareholders, together with the minutes of the meeting.

Messrs. Loveland and Heap were elected to serve on the committee, and the CHAIRMAN stated that by giving him a day's notice any shareholder could come to the office and bring his own auditor to examine the accounts.

The meeting closed with the usual compliment to the Chairman.

EAST CHIVERTON MINING COMPANY.

The four monthly meeting of adventurers was held at the offices, Queen Victoria-street, on Thursday,

Mr. GRANVILLE SHARP in the chair.

The accounts for the four months showed a balance of assets over liabilities of 141*l.* 6s. 1d.

The CHAIRMAN, in the course of a few brief comments on the accounts, said the amount due on forfeited shares was in the hands of the solicitor, and every effort would be made to get them in, but he should not anticipate much from that source.

The accounts were then passed and allowed.

Capt. SOUTHEY then read his report, which was as follows:—

The CHAIRMAN said, in reply to a question, they now only owed the bank 35*l.* 6s. 6d.——Capt. SOUTHEY said he hoped to get to the lode referred to in his report before the next meeting.——On the motion of the CHAIRMAN, seconded by a SHAREHOLDER, the manager's report was adopted, and ordered to be printed and circulated amongst the shareholders.

A call of 3s. per share was then made, payable in two instalments of 1s. 6d. each, payable respectively on July 10 and August 10, discount at the rate of 5 per cent. to be allowed on all calls paid on or previous to date.——The meeting then broke up.

THE PLYMPTON MINING AND ARSENICAL COMPANY.

The meeting, called to receive the directors' report and statement of accounts, was held on May 25, when Mr. J. B. COWELL HELDEN (the only director present), took the chair. The meeting was also attended personally and by proxy by over forty shareholders. The solicitor to the company was also present, and raised objections to the meeting proceeding to business for want of a quorum of members, the value of which will be understood when it is stated that Mr. Gurney stands indebted to the company in a sum of 20*l.* in respect of advances made to him by the directors, after deducting a sum of 192*l.* 2s. 6d. for legal expenses. The report of Capt. Miners as to the position of the mine was then read. Capt. Miners himself not being present, and the CHAIRMAN, having referred in brief terms to the directors' statement and accounts, moved their reception by the meeting, a proposition which was negatived by the meeting, not only because the accounts were not audited, but because they disclosed the advances to the solicitor, and showed that the directors had paid themselves 73*l.* 10s. without the sanction of the members.

The Chairman was the director retiring at the meeting, and no member proposed his re-election. The following resolution was unianimously carried:—"That Mr. W. H. Pratt, of Fenny Stratford, Buckingham, be and is hereby elected a director of the company, in place of J. B. C. Helden." The following resolution was also then carried:—"That the directors be requested to fill up the vacant seats on the board, and elect James Dawson and Thomas H. Oldman, directors of the company." This closed the business of the ordinary meeting, which then resolved itself into the extraordinary general meeting, convened upon the requisition signed by 24 shareholders. It was elicited from the Chairman and solicitor that Mr. Erwin Harvey Wadge, referred to in the circular of Mr. F. Warwick, was connected with Bishop, Earle, and Co., and that Mr. Gurney, the solicitor, had received, as also had Capt. Miners, the manager, some portion of the purchase money which had been increased from 4000*l.* to 4500*l.* The following resolutions were thereupon carried unanimously by the meeting:—That William Henry Pratt, of Fenny Stratford, in the county of Buckingham; James Dawson, of Stapleford, Nottingham; Thomas H. Oldman, of Gainsborough, Lincoln; Charles Coleman, of West Villa, Lexden-road, Colchester, Essex; and John Venn Yonge, of New Cross, Surrey, be and are hereby appointed a committee of inspection to enquire into the position of the company, its formation and promotion; the liability of the firms of Bishop, Earle and Co., Tilly and Co., and Marchant and Co., to refund sums of money received by them respectively for commission, brokerage, or for promotion money, and to report to a future meeting—three to form a quorum. That Edwin Carter be and is hereby removed from his office of director of this company. That Thomas H. Oldman, of Gainsborough, Lincoln, be elected a director in the place of Edwin Carter. That R. Chauncey be and is hereby removed from his office of director of this company. That Charles Coleman, of West Villa, Lexden-road, Colchester, Essex, be elected a director in the place of R. Chauncey.

COURT GRANGE UNITED SILVER-LEAD MINING COMPANY.

The statutory meeting of shareholders was held at the offices of the company, Winchester House, Old Broad-street,

Mr. C. O. ROGERS in the chair.

Mr. S. A. COBBETT (the secretary) read the notice calling the meeting.

The CHAIRMAN said the meeting is called, as you will see by the notice, in conformity with the Act of Parliament which requires that a meeting be held within four months of the incorporation of the company. The directors have called this meeting earlier than was absolutely necessary. Owing to the fact that this company is rather peculiarly constituted it has never issued any prospectus, and has no directors other than the persons who signed the Articles of Association of the company. The directors thought it only right that they should hold a meeting as soon as possible to give the shareholders an opportunity of deciding who they would wish should manage their property, and also to inform them as to the position of the company, the amount of capital it had at its command, and the work that it was intended to do at the mine. The shareholders are aware that the company took over the property from the liquidators of the old company on certain terms, which were in substance that they should liquidate the debts of the old company, amounting to 5754*l.* 0s. 9d., but it was provided that the first capital subscribed up to 2000*l.*, after providing for the payment of the expenses and interest on the mortgage, should be used for the working of the mine. By the terms of sale it was arranged that 25,478 shares of the company should be considered as having 15s. per share credited as paid thereon, and be offered *pro rata* to the shareholders in the old company. I have now to inform you that shareholders to the extent of 13,400 shares have availed themselves of this offer, therefore the financial position of the company at starting was that it had command of 5s. per share on 13,000 shares, 3250*l.*, to provide itself with the 2000*l.* before mentioned, and to pay the interest on the mortgage and an instalment on account of the old debts. I will now tell you in a few words what it is intended to do at the mine. You will see by the map here the different workings in the mine. It is intended to confine our operations at present to. Driving the 14 eastward, driving the 30 eastward, and driving the 45 eastward, and cross-cutting from the shaft at the 77, the deepest part of the mine, and also to stoping and dressing as much mineral as can be economically extracted. With the exception of another cross-cut at the bottom of the mine, which we are prevented doing, owing to the water being in, all the other points are in operation, and I am glad to say with very encouraging prospects. The 30, which had no ore in it when we commenced work, has been driven 9 ft. in a lode worth 8 cwts. per fathom. The 14 east, which was also without mineral to value when we recommenced work, has been driven 9 ft. in a lode worth ½ ton per fathom, and the captain wrote yesterday that the lode had further improved to 15 cwts. per fathom, and was looking splendid. In addition to this work it is intended to finish off the Broginan reservoirs, and complete the reservoirs at Craig-y-Pystill. These two latter works it is calculated will cost about 200*l.*, and after paying the rent (50*l.*) we shall have available about 1750*l.* to provide for the cost at the mine, which is considered to be sufficient, as we do not calculate upon spending more than 250*l.* a month, and in the meantime, even with the low price of lead, the directors calculate that there will be a margin of returns over expenditure, even providing for the exploratory works I have already mentioned. There is one matter which the directors would like to take the opinion of the meeting upon to-day, and that is with reference to a letter which they have received from the captain of the mine, Mr. J. G. Green, in reference to an application for shares in the company. Mr. Green it appears held 272 shares in the old company, but at the time of the reorganisation was unable to take up his proportion of the new shares, owing to his inability to pay the calls. It would now appear that Mr. Green, either is in a better financial position or it may be owing to the improvement that has lately taken place in the mine, thinks more highly of the property than he did, at all events he has applied to the directors for an allotment of 272 shares, upon which he is prepared to pay the calls. The directors have under the Articles of Association power to deal with the shares as they think proper, but as Mr. Green's application arrived yesterday they thought it would be as well to bring it before the general meeting to-day. As far as the directors are concerned, their feeling is that Mr. Green should have the shares as they think it very desirable that the captain should have an interest in the mine, for which he has actually paid cash.

After some discussion it was decided that Mr. Green's application be acceded to, but on the motion of Mr. ANDREW GRAY, seconded by Mr. C. FULLER, it was resolved that the directors shall not issue any more shares after this date at a less price than 1*l.* per share without first calling a meeting of shareholders to sanction their so doing.

The CHAIRMAN then said that the only formal business which has to be brought before you to-day is the election of the directors. The present board, as I have informed you before, consists of the persons who signed the Memorandum of Association. Of these the following offer themselves for re-election:—Messrs. Wilson, Burstall, Rogers, and Pell.

Alderman COX proposed that Mr. Andrew Gray should be added to the board of directors.——The CHAIRMAN said that if the present directors were re-elected they would be very happy to have Mr. Gray as a collegue.

On the motion of Mr. DOX, seconded by Dr. PETT, the retiring directors were re-elected, and a vote of thanks to the Chairman terminated the proceedings.

WEST CARADON MINE.

The Duke of Leeds' mineral agent inspected this mine on the 15th ult., and again on the 2nd inst., and the following are his reports:—

West Caradon Mine, May 15.—Agreeably with your request I have this day inspected the above mine.—Gilpin's Lode: I find the deep adit has been extended a great distance west of the main cross-course, through a lode varying in size from 1 ft. to 2 ft. wide, and a large quantity of copper ore has been raised. The lode in the present end is rather small. The 27 fm. level has been cleared some distance. In this level a winze has been cleared up 5 ft. to bottom, where the lode is worth 2 tons of copper ore per fathom. I recommend this end to be driven west, and also some trial made both in the back and bottom of the levels, and by doing so I have no doubt rich discoveries of ore will be made.—Vivian's North Lode: In the 50 fm. level east and west there is a very promising lode, which will yield from 1 to 2 tons of copper ore per fathom. In the 38 fm. level the lode will turn out about 2 tons of yellow copper ore per fathom. The lode is in whole ground for a great distance. In looking at the ground taken away by the late party, and with the copper ore now in sight, I do not know of a better speculation in the county, as by clearing out the levels and rising in tha most promising places on the various lodes, there is no doubt large discoveries of ore will be made, and this can be proved for a little money, as no pumping engine will be required, the mine being drained 80 fms. deep by South Caradon Mine. All the machinery which will be wanted is a steam-whim, for hauling and crushing the ore, and judging from the present value of the various points of operation I am of opinion the mine will soon be in a position to make good returns of copper ore.—JOHN CURTIS.

West Caradon Mine, June 2.—I have inspected the above mine to-day.—Vivian's Lode: In the 50 fm. level west the lode has maintained its size and value—2 tons of yellow copper ore per fathom. In the 50 fm. level east, by extending the level a fathom or two further, it will be under the ore grouud gone down below the 38 fm. level. In the 38 fm. level, west of cross-cut, the lode is much the sameas when I last saw it—worth 2 tons of yellow copper ore per fathom. The lode over the cross-cut is 20 in. wide, and from its appearance will yield 2 to 3 tons of copper ore per fathom. I recommend the 38 fm. level be driven east of this cross-cut, where the lode is much the same as in the back—worth from 2 to 3 tons per fathom.—Gilpin's Lode: In the deep adit there is no material change to note since my last visit. In the 27 fm. level west a trial has been made in the back and bottom of the level west of the winze, where the lode will turn out about 2 tons of yellow copper ore per fathom. A pare of men are taking down the lode standing in the side of the level about 20 fms. further east, where the lode will turn out 1 ton of copper ore per fathom, and there is no doubt if further trials are made more ore ground will be laid open. I consider this a valuable piece of mineral ground, it being all whole to the 80 fm. level. To the north of this lode about 25 fathoms is another lode, called Taylor's, and which so far as seen contains yellow, grey, and black copper ore. I recommend a trial to be made here also, as the lode is all in untried ground. On the whole, the mine is looking much better, and will further improve as trials are made on the various lodes. When a steam-whim and crusher are erected you will have returns of copper ore in the market in a very short time. I will here remark for the short time you have been working in clearing and securing levels, winzes, &c., and opening on the various lodes and branches, the mine has opened out very satisfactorily.—JOHN CURTIS.

SOUTH CAMBRIAN MINES—SPECIAL REPORT.

June 10.—Having been requested to give a special report of my progress, as captain and manager of this mine, for the information of the shareholders, I will commence with the underground workings as they now stand, and then proceed to the machinery and dressing apparatus. The underground workings consist of a deep adit level 7 ft. high and 5 ft. wide, and 120 fms. long, with horse tramway to the forebreast, and about 35 fms, of backs as cover, with a straight drivage of about 600 fms. from our present forebreast on the course of the lode, which varies from 18 to 26 ft. in width. In making our adit so lofty and wide, a work insisted upon by our managing director, we have found great advantage in the better circulation of air and ventilation of the workings, besides the convenience and increased facilities for locomotion and drainage. About 60 fms. from the entrance of the adit we have completct a main shaft to surface from adit level, by means of which the mine below the adit will be worked, and which is now proposed to be sunk 15 fms.; and in order to prove the ground underneath the adit, about 30 fms. beyond the main shaft, we sunk a winze 8 fms., passing through good blende and lead ores, and continually improving for lead every foot we went down. Having thus ascertained beyond question or doubt that the mine would strengthen and improve as I went down, I stopped further sinking the winze, and propose first to go down with the engine-shaft 15 fms., and drive to and underneath this winze to extract the ores. I have also driven two cross-cuts, and have proved the existence of two powerful parallel lodes. In driving our adit we have gone through blende, malachite, and lead in large and paying quantities, but I have as yet made no attempt to break them down, except as to the copper, as the accumulation of orestuff at the mouth of our adit, which is ¾ mile from our dressing-floors—connected therewith by a tramway—would only be choking us up and increasing work by having to be twice removed, when by leaving it until the machinery is in motion it will be, when broken down, at once trammed to the dressing-floors without further trouble. In removing the ores through which we have broken in working the adit, I may here say I have accumulated at least a month's supply for the machinery, of copper, lead, and blende ores; and to prevent further accumulation I have partially for the present stopped the underground workings. All our buildings on the dressing-floors are completed, and the machinery is so near completed that I have to-day (June 10) taken my measurements for the strappings to turn the same, so that an almost immediate commencement is certain, but the uncertainty of delivery of the smallest thing from the mechanics' shop makes one diffident of naming the starting day until I have absolutely received the last thing I may require.—A. WILLIAMS.

THARSIS SULPHUR AND COPPER COMPANY.

The directors' report, prepared for presentation at the general meeting in Glasgow, on Thursday next, is highly satisfactory and encouraging. The total quantity of mineral raised during the financial year from the Tharsis and Calanas Mines was 438,485 tons, as against 419,032 tons in the previous 14 months. The net profits for the 12 months ended March 1 (including balance brought forward from last account) were 241,942*l.*, out of which the directors recommend a dividend of 20 per cent., free of income-tax, which will absorb the sum of 227,332*l.*; leaving 14,610*l.* to carry forward.

In connection with the fusion with the French company all the formalities, legal and otherwise, have been carried through, and this important transaction between the two companies may now be considered as happily concluded. Since last report 10,861 capital shares of the French company have been redeemed, involving a payment of 107,958*l.* 6s. 9d. of principal and 5265*l.* 2s. 1d. of interest, together 113,223*l.* 8s. 10d. There still remain outstanding on 510 capital shares the sum of 5069*l.* 8s. of principal, and 252*l.* 16s. 4d. of interest, together 5322*l.* 4s. 4d. The Jouissance shares have been exchanged for shares in the Tharsis Company to the extent of 45,798 of the one for 22,899 of the other, leaving 1534 Jouissance shares, representing 767 Tharsis shares, still to be presented for exchange. All the exchanged shares have received payment of the last dividend, the amount unclaimed and due to the unexchanged shares being 1265*l.* 11s. The Jouissance shares are all "to bearer." The inventories of property and plant in Spain appertaining to the present balance have been increased by the sum of 52,995*l.* 8s. 3d., for value received in property, working plant, and machinery handed over by the French company, and this sum has been deducted from the item of 430,900*l.* which stood in last balance-sheet as the net purchase price of the "mines in Spain."

The fixed property accounts at Tharsis have been increased during the year by the sum of 22,358*l.* 13s. 3d. spent on purchase of land; the reconstruction of, and important additions to, the cementation department; new drainage reservoirs for intercepting copper liquors; additional machinery, including a Diamond boring machine; the erection of new offices, new houses, and improvements on old houses, interior railways, &c., all of which have been efficiently carried out, and have already yielded a profitable return on the outlay. The appliances for preventing loss of copper during heavy rains are now complete, and the gain thus obtained will amply recoup the expenditure. In addition to the foregoing there has been expended during the year on relaying interior railways, and repairs on workmen's houses, &c., 11,884*l.* 8s. 10d., all of which has been charged to the revenue. The property and plant at the Tharsis Mines, transferred from the French company, represented 48,222*l.* 5s., which, added to the other accounts, brought up the whole to 175,426*l.* 2s. 11d., from which there has been written off for depreciation 15,811*l.* 5s. 6d., leaving 159,614*l.* 17s. 5d. at the debit of "Works, Buildings, Machinery, and Plant," at the Tharsis Mines. The inventory of waste-heaps has been finally written down by the sum of 4567*l.* 0s. 11d., leaving this asset at the nominal amount of 100*l.* During the year several hundred tons of copper have been obtained from this source, which has gone to cheapen production; and this will continue, more or less, for years to come.

The metal works have gone on steadily during the past year. The additions to property, plant, and machinery, have amounted to 11,591*l.* 11s. 1d., and include 1135*l.* 0s. 11d. spent on railway sidings, and plant for silver process at Widnes; 335*l.* 7s 4d. on additions to plant at Oldbury; 3174*l.* 6s. 3d. on plant for silver process, washing tanks, new store, and new chimney at Hebburn; 6001*l.* 0s. 5d. at Garngad, of which 5867*l.* was invested in the purchase of the ground on which the works are situated, and the balance spent on additional plant for silver process there; and 986*l.* 0s. 4d. for plant for silver process at Cardiff. There has been a small decrease in the moveable plant at Willington, amounting to 14*l.* 4s. 2d. All repairs have been charged to revenue, as usual, and 5 per cent., amounting to 1167*l.* 11s. 1d. written off for depreciation; a reduction on the metal works property account of 79*l.*

During the year the company delivered to customers 159,264 tons of pyrites. The iron ore produced was 177,153 tons, and the quantity delivered to consumers 213,120 tons. The production of copper has again continued satisfactory, but the market has not been steady or reliable. In the autumn and early winter we had a rapid rise in prices, and an active demand, of which advantage was taken in making large sales; but before and since we have had to contend with low prices and an uncertain market, and the average price realised has been less than that of the previous 14 months. The quantity of silver and gold produced from the partial extraction at the Garngad Works was 17,766 ozs. of the former and 413 ozs. of the latter. This branch of our operations will be extended, as the process is now begun at Hebburn and Cardiff, and will shortly be started at Widnes.

The auditors have visited the mines and verified the manner in which the stocks are taken. The "Mines in Spain" have been written down by 17,904*l.* 11s. 9d. charged to profit and loss, reducing that asset to 360,000*l.* In the same way 15,000*l.* miscellaneous assets have been written down: 20,000*l.* have been carried to the reserve fund, and the remaining interest due on the redemption of the French Company capital shares, 342*l.* 19s. 10d., has been charged to profit and loss.

THE ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

Capt. N. C. Morcom, April 10: I beg to say that on two different occasions I have very carefully examined all the points in connection with the Tirito shaft and mine. The joint report of Mr. Clemes and myself (1878) were the ideas and convictions formed and expressed. Speaking for myself only I know no reason to change my opinion or the views I then entertained. I might, however, say that if any change of opinion has taken place I feel more reluctant than ever that any operations should be carried out at the Tirito bottom before other points of greater interest, and in my opinion of far greater promise of success, be tried, I refer particular to the Mina Grande Mine, where I consider our prospects of success are far higher and of a more certain nature, and not of such a speculative character as the search for ore in the Tirito. As stated in our joint report the further development of the Tirito bottom would be most interesting not only to ourselves but to our neighbours on the same lode, whose mines are now without ore in the bottom. Looking at the great expenditure necessary for fully carrying out this project, and the uncertainty of meeting with another ore zone (it) is a speculation I cannot highly recommend.

You have observed from time to time I have stated in the weekly reports the advisableness of driving the 24 north of the Balvanera shaft, *providing* the course of ore in the 12 continues to make in depth. This would require about 3300 to accomplish. But the worst feature in the case is the long distance to drive in hard sterile ground, and the probability of every level required to be driven for drainage, &c., would become longer and more expensive, as the ore body appears to be gaining north and west of the above named shaft. Mr. Clemes and myself have often expressed a wish that the Balvanera shaft was further north or the San José shaft was further to the south, in order to work to a greater advantage the splendid ore course of Mina Grande. The Balvanera shaft is not only situated too far to the south of the present ore zone, but is in a very bad state, requiring frequent repairs of an expensive nature. Hence the desirableness of a new shaft for the Mina Grande Mine. This would be a speculation worthy of the company's attention, and would add greatly to the facilities of proving this most interesting part of the property. A new shaft would greatly improve the ventilation of this part of the mine. Any portion of the 5000*l.* you spoke of spent in the Mina Grande would most probably lead to something of importance, and the increased value of the property. The depth of a new shaft from surface to tunnel level would be about 50 ft., and the sum necessary to sink it from 8000 to 9000 (1600*l.* to 1800*l.* sterling).

I consider this to be of far greater importance for the present than anything suggested in reference to the Tirito bottom. Notwithstanding, I should not recommend even this to be done until the winze has reached a depth of 10 to 12 fms. below the 12 fm. level, showing most unmistakably that the course of ore is making in depth to warrant such an expenditure. Also that the 12 fm. level be extended at least another 10 or 12 fms. north in a productive and remunerative lode. This being done and satisfactory results being obtained would place such an undertaking beyond the region of a gloomy speculation.

During the time the above operations are being carried out—i.e., the sinking of the winze below the 12 fm. level and the driving of the 12 north in the Mina Grande—I would suggest that some exploratory work be done on the first lode, at tunnel level. The ground being soft, a great deal can be done in the way of exploration at a small expense.

I would beg to suggest for your consideration the next place of importance—the exploration of a part of the long stretch of ground between the Dios Padre shaft and the north boundary of Dios Padre and the Quintera setts. The former workers met with ore of a high ley in parts of this sett, which I think should be a sufficient inducement to prove some of the virgin ground still untried.

I would not advise any further operations at the Dios Padre shaft, as it appears to be in a barren part of the lode. Capt. Morcom concludes by hoping that the suggestions he had made would meet the approval of the directors and shareholder of the company, and that the results would be for the benefit of all concerned.

DIOS PADRE.—April 17: Of late the tributers have been engaged clearing some old workings to the north of the main shaft in the hope of finding some good pillars of ore said to have been left by the old workers. What success they will meet with remains to be proved; the exploration is at their own risk.

CRUZ VERDE.—April 17: During the past two years a considerable quantity of docile ore has been taken from this part of the mine; but henceforth we shall be able to extract but very little until further exploration be made, such as driving the No. 1 level further north, a cross-cut to the east, and a rise in the back of No. 1 level. The carrying out of these explorations would, I think, be attended with the discovery of more metal.

SAN JOSE.—April 17: For a long time the tributers have been trying in vain to find ore in sufficient quantities to repay them for their labour, but hitherto nothing of any importance has been met with. The aspect of this part of the mine was never favourable for the production of ore. All operations are now suspended.

MINA GRANDE.—April 17: The 12 north is again started; the lode has at present a kindly appearance, and yields ore in paying quantities. The stull is finished in this level, and the stopes started in the back. The lode is very productive, and appears to be of a good quality. The lode in the winze sinking below the 12 is poor at present. A bed of felspar has cut off the ore; this we hope is only for the moment, and that soon metal will be met with again. Stoping with all possible force is being carried on in the bottom of the 15. The lode has been of a very productive nature; at present it is less valuable, and strong indications present themselves of the lode becoming somewhat disturbed.

April 30: The lode in the 12 driving north produces frequent patches of good black ore; the ground is very hard indeed, consisting chiefly of quartz and felspar. I fear the lode will not improve until the ground becomes easier. It is invariably the case when the ground gets very hard that the lode falls off in productiveness. The stopes in back of the 12 are still very productive, yielding abundance of ore. The winze sinking below the 12 is still in a very poor and hard bar of ground, still it is not entirely without ore, occasional stones of ore being met with. In consequence of the very hard felspar in which the winze is situated, but little progress is made in sinking. The stopes in bottom of the 15 have become almost too poor to continue their working. Unless a change takes place for the better they will be suspended until the 12 winze proves the ground in depth.

LA VIRGEN.—April 17: The stopes above tunnel level are productive both of green and black ore, and appear to be of a fair quality. The lode in the stope in back of the 10 is still of a productive kind.

April 30: The stopes in the back of the tunnel level are still looking well; a great deal of fine black ore has recently been broken. The stope in the 10 is still maintaining its usual yield of black ore.

TIRITO.—April 17: The taking away of the arch in the old stope below the 10, north of engine-shaft, is still being proceeded with; it has (been) and is still producing a great deal of good black ore.

April 30: Excavations in the old arch of ground are rewarding us handsomely in the shape of good black ore; it will require about three weeks longer to take away what remains; when this is done we shall make a search for ore in bottom of the 20.

FIRST LODE—TIRITO.—April 17: The stope in the back of tunnel level is yielding very good docile ore. I never saw this branch looking so well as at present, but owing to its changeable nature we cannot place too much confidence in its continuance.

April 30: The stope in the back of tunnel level has fallen off a little in value; it has become so hot that we are obliged to get it ventilated by doors placed in the tunnel to throw the air through it; this being done we shall rise in the back and push the end a little further north. Our late operations here have been attended with success.

LAS PLOMOSAS.—April 30: This mine is situated about ¾ mile to the east of Dios Padre Mine. The lode runs about north and south, and inclines a little to the east. The backs of the lode have been taken away by former workers to the depth of 40 ft; its present depth is 54 ft. from surface. The lode is small, but regular, consisting of a very nice galena, which has a low ley of silver, sometimes a little steel grain grey ore is met with. The value of the lode at present is 2½ tons of lead per fathom. There are other points in this sett deserving of attention apart from the present place of operation.

J. H. Clemes, April 24: You will observe we took up two new claims on your behalf.

EL TEPUSTELL.—A lode of ironstone—magnetic oxide of fair quality.

LAS PLOMOSAS.—A mine close by, producing a little galena; this is worked on tribute at tariff rates.

MINA GRANDE.—May 1: The winze at the 12 is still being sunk through a barren horse of felspathic porphyry; we are pushing this point as fast as we can.

LAS PLOMOSAS.—This mine gives two ores—a very docile galena, poor in silver, and a "leaching" ore, assaying about 840; a small quantity of grey copper ore (petanque) is found. After the rainy season we may do a little opening up. The mine has been long idle for want of a beneficio (reduction works).

Registration of New Companies.

The following joint-stock companies have been duly registered:—

THE WHEAL GEORGE LEAD MINING COMPANY (Limited).—Capital 15,000*l.*, in shares of 1*l.* To adopt and carry into effect an agreement made between G. Beckingsale on the one part, and Jesse Smith, on behalf of the compnny, to purchase or otherwise acquire the lands and mining properties therein mentioned, and any others, also mining plant, machinery, implements, &c. To crush, smelt, and reduce the produce and develope the properties, and acquire, buy, and deal in ores, minerals, and metallic substances. The subscribers are—W. F. Richardson, 11, Queen Victoria-street, broker, 10; H. Cowdery, Haverstock Hill, bank director, 50; F. R. Davidson, Newcross, gentleman, 20; J. B. Rogers, 10, Lombard-street, engineer, 20; J. P. Anderson, 41, Watham-grove, clerk, 20; A. F. Green, Kingston-upon-Thames, gentleman, 100; W. J. Leask, Dalston, architect, 10. The first directors are—W. Thornton, H. Cordery, and A. F. Green, the minimum remuneration to be divided being fixed at 100 guineas per annum.

JOHN KING AND COMPANY (Limited).—Capital 5000*l.*, in shares of 5*l.* To acquire and carry on the business of engineers and apparatus manufacturers in Liverpool. The subscribers (who take one share each) are—W. H. King, Liverpool; G. P. King, Liverpool; J. King, Liverpool; W. R. King, Liverpool; J. A. Buck, Liverpool; T. Thompson, Liverpool; J. D. Lynch, Liverpool.

THE BULTFONTAIN MINING COMPANY (Limited).—Capital 80,000*l.*, in shares of 20*l.* To acquire by purchase or otherwise from time to time land claims in Griqualand West, for the purpose of opening, working, and developing these, and carrying on the business of a mining company in all its branches. Also to buy and sell diamonds, precious stones, &c. The subscribers (who take one share each) are G. Coster, 11, Park-crescent, gentleman; S. Ochs, 83, Hatton Garden, merchant; A. Grumbaum, Paris, banker; F. Grumbaum, Paris, banker; L. Ochy, Paris, merchant; A. Deps, Paris, merchant; A. L. Ochs, Hatton Garden, merchant. The first directors are Messrs. Coster, Ochs, and Leoni; the number not to be below three or exceed five; qualification 50 shares.

HARROGATE ELECTRO HYDROPATHIC COMPANY (Limited).—Capital 12,000*l.*, in shares of 10*l.* To purchase and carry on an establishment at Harrogate. The subscribers are—W. T. Burns, Harrogate, 100; C. Smith, Harrogate, 25; W. Hardy, Harrogate, 25; W. Green, Leeds, 25; J. Speer, 8, Bow Churchyard, 5; W. Thompson, Belfort, 10; J. R. Burns, Andover, 5.

THE ALDRINGTON ESTATE WATER COMPANY (Limited).—Capital 25,000*l.*, in shares of 10*l.* To supply an estate in Sussex with fresh and sea water. The subscribers (who take one share each) are—W. H. Stretton, 8, Suffolk-place; E. Vaughan, 6, Moorgate-street; G. Gallard, Hove; W. J. Williams, Brighton; A. Dalby, Temple; J. Hilliard, 75, Cornhill; J. H. Stretton, 75, Cornhill.

GENERAL WATERS SUPPLY ASSOCIATION (Limited).—Capital 20,000*l.*, in shares of 1*l.* To manufacture and supply all kinds of mineral and other waters. The subscribers (who take one share each) are—H. R. Anall, Sidmouth; H. Foyen, Esher; E. F, Bradby, 24, Osnaburgh-street; E. C. Bradby, 24, Osnaburgh-street; C. L. Atterbury, Hampstead; H. Bright, Snaresbrook; E. C. Stevenson, 72, Gracechurch-street.

THE DIRECT PHOTO-LITHO AND METALLO GRAVO PRINTING COMPANY (Limited).—Capital 4000*l.*, in shares of 20*l.* To carry on the business of topographers, photographers, and engravers. The subscribers (who take one share each) are—A. Hentchell, 76, Mornington-road; J. Swan, 266, Strand; C. E. Johnston, 13, Waterloo-place; G. B. Mallison, 27, West Cromwell-road; R. Schnorrenberg, 57, Bishopsgate-street Within; W. H. Smith, Putney; T. M. Forster, 13, Waterloo-place.

THE STAFFORDSHIRE ROLLING STOCK COMPANY (Limited).—Capital 100,000*l.*, in shares of 5*l.* To acquire and carry on a business at Stoke-upon-Trent. The subscribers (who take one share each) are—M. S. L. Staunton, Union Club; J. Potts, Macclesfield; E. M. Garside, Ashton-under-Lyne; E. J. Barker, 25, Gibson-square; T. Klein, Stoke-upon-Trent; A. Hanson, Bexley; M. Jones, Stoke-upon-Trent.

UNITED TELEPHONE COMPANY (Limited).—Capital 500,000*l.*, in shares of 5*l.* To carry out agreements made with two telephone companies. The subscribers (who take one share each) are—F. Crimps, 6, Old Jewry; C. E. Webber, 36, Coleman-street; A. Fawkes, 36, Coleman-street; R. Summers, 36, Coleman-street; A. White, 11, Queen Victoria-street; G. Twiss, 11, Queen Victoria-street; A. F. Solomon, Leatherhead.

THE SUTHERLAND SHIPBUILDING COMPANY (Limited).—Capital 100,000*l.*, in shares of 100*l.* To carry on a shipbuilder's business. The subscribers (who take one share each) are—J. Wood, Coal Exchange; N. Wood, Coal Exchange; A. C. Adam, Newcastle-on-Tyne; F Gordon, Sunderland; R. Foster, Sunderland; E. Robson, Newcastle-on-Tyne; M. Unwin, Sunderland.

SAN PEDRO (CHILI) COPPER MINING COMPANY (Limited).—Capital 75,000*l.*, in shares of 2*l.* To adopt and carry into effect an agreement made for the purchase from the liquidator of the property, assets, &c., of the San Pedro (Chili) Copper Mining Company (Limited) which is now in liquidation. To work, open, and develope these mines, or dispose of the same, also to manufacture and convert out of the ores belonging to the company any articles for sale, export, &c. The subscribers (who take one share each) are—H. Renwick, Herne Hill, no occupation; H. T. Burgess, 81, Old Broad-street, shareholder; P. J. Gorden, Highgate, accountant; C. O. Rogers, 1, Winchester House, merchant; W. L. Dunn, Clapton, accountant; S. A. Cobbett, Mitcham, secretary; H. A. Roughton, 31, Upper Bedford-place, no occupation. The subscribers are to appoint the first directors, whose number must not be more than seven or less than three.

THE SKINNINGROVE IRON COMPANY (Limited).—Capital 30,000*l.*, in shares of 100*l.* To purchase certain works in Yorkshire, and to carry on the business connected therewith. The subscribers are—J. Rogerson, Durham, 20; F. C. Hutchinson, Middlesborough, 30; J. T. Napier, Glasgow, 20; M. Kennedy, Ulverston, 20; C. Bone, Stockton-on-Tees, 1; R. T. Fulwell, Monkwearmouth, 20; E. K. Fox, Saltburn-by-the-Sea, 20.

THE BOGNOR RESIDENCES AND HOTEL COMPANY (Limited).—Capital 60,000*l.*, in shares of 5*l.* To acquire land and erect residences and an hotel thereon. The subscribers (who take one share each) are—W. H. Drake, 81, Gloster-road; J. Thomas, 6, Brockdon-grove; R. N. Denning, 42, Cumberland Market; W. Steel, 2, Jermyn-street; H. Brooksby, 24, Sherwood-street; E. Hare, 23, Sherwood-street; W. Munday, New Wandsworth.

BEAUMONT COMPRESSED-AIR LOCOMOTIVE COMPANY (Limited).—Capital 300,000*l.*, in shares of 10*l.* Acquiring and applying certain patents for improvements in motor engines. The subscribers are—H. C. Raikes, Mold, 50; W. J. Ingram, 65, Cornwall-road, 50; F. E Beaumont, 6A, Victoria-street, 50; H. Vignoles, 14, Delahay-street, 1; E. Easton, 7, Delahay-street, 1; R. G. Elmes, 7, Westminster-chambers, 1; P. A Scratchley, 21, Old Square, 1.

KNIGHT AND COMPANY (Limited).—Capital 15,000*l.*, in shares of 1*l.* The purchase, manufacture, and sale of patent and other medicines. The subscribers (who take one share each) are—W. Parsay, Brighton; H Gillingham, 25, Budge-row; F. A. Roques, 11, Queen Victoria-street; J. T. Dawson, 79, Cornhill; R. Stubbs, Peckham Rye; J. T. Trengrouse, 81, Gracechurch-street; J. Lord, 36, Queen Victoria-street.

STANDARD BANK OF LONDON (Limited).—Capital 2,000,000*l.*, in shares of 20*l.* To carry on the business of bankers in all branches. The subscribers (who take 50 shares each) are:—J. Page, Lower Edmonton; J. Neil, Brixton; G. R. G. Rowe, Horn Park; F. Hutley, Witham; S. F. Cross, Lansdowne-road; J. B. Lambe, 199, Upper Thames-street; J. McDonnell, 44, Finsbury-road.

THE BRADFORD PROPERTY AND INVESTMENT COMPANY (Limited).—Capital 25,000*l.*, in shares of 10*l.* To carry on the business of a land and building company. The subscribers (who take 1 share each) are:—C. Gott, Bradford; W. Greaves, Bradford; W. Glossop, Bradford; J. Hind, Bradford; H. Robinson, Bradford; J. Hitchen, Bradford; W. Lobley, Bradford.

THE CARRIAGE CO-OPERATIVE SUPPLY ASSOCIATION (Limited).—Capital 100,000*l.*, in shares of 5*l.* To manufacture and sell carriages and harness. The subscribers (who take 1 share each) are:—E. Knox, Bow; H. Wade, Brixton; T. J. Donnelly, Shepherd's Bush; E. Ankett, Peckham; W. H. Hardwick, 77, Tollington Park-road; F. Gibson, 42, Reverdy-road; D. Benton, 25, Cardington-street.

CHALET COMPANY (Limited).—Capital 50,000*l.*, in shares of 5*l.* Erecting and letting buildings, and carrying on the business of newsvendors. The subscribers (who take one share each) are—W. W. Blackstone, 40, Camden-square; M. H. Judge, 6, Dudley-place; F. C. Dobbing, 101, Queen Victoria-street; T. H. Garland, Brixton; A. T. Watkyns, Fulham; F. Taunton, Crouch End; C. Marsh, 116, London-road.

THE SOUTH GARSTON DOCK AND WAREHOUSE COMPANY (Limited).—Capital 300,000*l.* in shares of 10*l.* To acquire and carry on the business of a dock company. The subscribers (who take one share each) are—A. Stoddart, Liverpool; A. Cassels, Liverpool; J. Hubback, Liverpool; R. Galloway, Liverpool; S. C. Hadley, 5, Knightrider-street; A. Elford, 79, Mark-lane; J. Spence, 27, Walbrook; M. J. Paddock, Manchester; W. Beswicke, Rochdale; J. Dawson, Manchester; S. Schofield, Oldham.

THE METROPOLITAN PROVIDENT DISPENSARIES JOINT STOCK COMPANY (Limited).—Capital 50,000*l.* in shares of 1*l.* To found provident dispensaries, the maximum sum in each case being 3000*l.* The subscribers are—J. Stansfeld, Hyde Park Gate, 100; Sir C. E. Trevelyan, 8, Grosvenor Crescent, 250; Lady Trevelyan, 8, Grosvenor Crescent, 50; H. N. Hoare, 37, Fleet-street, 50; R. Frewer, Forest Gate, 50; Sir R. Alcock, 14, Great Queen-street, 25; Sir T. F. Buxton, Waltham Abbey, 100; A. Carpenter, Croydon, 100.

THE CALEDONIA STEAMSHIP COMPANY (Limited).—Capital 100,000*l.*, in shares of 25*l.* To carry on a shipowners' business. The subscribers (who take five shares each) are—R. Duncan, Liverpool; R. C. Macnaughton, Liverpool; W. Blackwood, Liverpool; J. Bomnphrey, Liverpool; A. Boyd, Liverpool; S. Williamson, Liverpool; J. Bowden, 34, Leadenhall-street.

THE VALPARAISO DRAINAGE COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l.* To purchase certain rights to construct and establish drains and pipes in Valparaiso. The subscribers (who take one share each) are—Lord Cochrane, 57, Ennismore Gardens; W. Lloyd, 19, Finchley-road; E. O'Neill, Ballymena; J. Beattie, Teddington; F. H. Jeue, 2, Paper Buildings; J. A. Hilliard, 75, Cornhill; S. Norman, Uxbridge.

VASA MURRHINA COMPANY (Limited).—Capital 150,000*l.*, in shares of 1*l.* To carry on in England and elsewhere a business connected with glass. The subscribers (who take one share each) are—E. Ray, Shepherd's Bush; T. P. Partridge, Hammersmith; T. H. Fullstone, 32, Elizabeth-street; J. H. Charles, Islington; C. W. Witham, Newington; B. J. Wildbore, Stepney; P. Varnals, 17, Vauxhall Bridge-road.

LONDON AND PARIS MILLINERY ASSOCIATION (Limited).—Capital 20,000*l.*, in shares of 2*l.* and 5*l.* To carry on the business of a co-operative society for the supply of ladies' and children's dress of every description. The subscribers are—W. Lichfield, 23, Burnt Ash Hill, 10; E. A. Dando, Dover, 1; A. N. Ford, 17, George-street, 1; W. F. Nuthall, 40, Barons Court-road, 1; T. P. Wybrants, 74, Blanfield-street, 1; J. Dunham, Brixton, 5; F. S. Meikleham, 37, Mincing-lane, 20.

THE CULM DAVY BRICK AND TILE COMPANY (Limited).—Capital 15,000*l.*, in shares of 25*l.* To acquire and continue an established business. The subscribers are—B. Follett, Windsor, 72; C. J. Follett, 78, Queen's Gate, 66; U. Bailey, Culm Davy, 20; A. N. Higgins, New Malden, 8; L. E. Follett, Surbiton, 6; H. C. Newton, 24, Finborough-road, 4; G. Seymour, Exeter, 2; A. Oakley, Exeter, 2.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES*—No. CXLXIV.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Mining Engineer, Wakefield.
(Formerly Student at the Royal Bergakademie, Clausthal.)

The influence of a varying barometric pressure on the issue of gas from the coal is generally explained somewhat as follows. From what we know, it is assumed that gas exists in the coal under an enormous pressure. When a shaft is sunk into a fresh portion of a coal seam the gas is then for the first time exposed to the atmosphere, and its exit from the pores of the coal is caused by the difference between the atmospheric pressure and the pressure under which the gas exists in the coal. This difference is so enormous that the gas comes off very rapidly. As the gas in the immediate neighbourhood of the exposed face soon makes its exit, the gas at a greater distance from the exposed face follows, and the pressure of the gas will gradually increase from the atmospheric pressure at the exposed surface, proceeding upwards, till at a certain distance from the face of the coal the pressure of the gas is at the original pressure. As the gas continues to flow out this distance increases, until a point is reached when the distance that the gas has to traverse is such that the resistances it meets with on its way are so balanced with the difference between the original pressure and the atmospheric pressure, that the flow of the gas is comparatively small and constant. Should, however, the barometric pressure decrease the difference between the original and atmospheric pressures (which is the motive force) is increased, and consequently that the rate of flow of the gas out of the coal is increased. A fall of the barometric pressure by 1 inch means a reduction of ½ lb. on square inch, or 72 lb. on the square foot, and this when computed for the whole exposed area of a mine must be enormous.

Irrespective, however, of the direct influence of this reduction of pressure on the exit of gas from the pores of the coal, it may have an influence on the amount of gas issuing into a mine in another manner. As is well known in all strata, whether stratified or not, there are always certain surfaces, or planes, along which the ground, when it is undermined, having lost cohesion breaks. A reduction of 1 inch of the barometric pressure means a lessening of the upward pressure of the air on the roof of 72 lb. to the square foot, and thus lowering of the pressure over a large surface may be sufficient to determine a fall of a portion of the roof, and may drive any accumulated gas out of the goaf and the workings, and exposing a large fresh surface may result in the sudden giving off of a large amount of gas.

A third reason assigned as one pointing to the probility of a lowering of the barometric pressure having a considerable influence in causing explosions is that as, according to Boyle and Marriot's law, the volume of a given quantity of gas increases when the pressure diminishes; the gas collected in the upper part of goaves must expand when the barometric pressure becomes less, and as it can only expand in a downward direction the gas comes further down towards the floor. For example, suppose a goaf to be rectangular in shape, and the sides next the coal to rise vertically to the roof of the goaf, and suppose, moreover, that the goaf is 20 yards in height above the roof of the coal, or the roof of the levels or gateways coming into the goaf. When the barometric pressure lowers, say from 31 in. to 30 in. (a fall of 1 in.), then the volume of the gas will increase 1-30th, and the bottom level of the gas will lower 2 ft., so that if the level has stood 2 ft. above the roof of the levels, it will now have descended just sufficiently far enough to gain access to the levels. In actual practice, however, this descent will be much greater, since the upper part of the goaf is comparatively a large unoccupied space, but the greater parts of the space of the bottom part of the goaf is filled with stones, and hence the gas can only expand in the interstices between the gobbin, and the space of the interstices may be only 1-4th, probably less, of the total space of this lower part of the goaf; hence the total descent of the gas would be four times as much—8 ft. in the supposed case.

A lowering of the barometric pressure lessens the natural ventilating power (that produced by natural changes of temperature and pressure); but we shall show that its influence is so comparatively slight that a lowering of the barometric pressure cannot on this account be considered as materially increasing the liability to explosions of gas.

Of the former three reasons for considering that a lowering of the barometric pressure increases the liability to explosions most stress is laid on the first; and the second and third reasons are generally accepted as possible and probable causes in some explosions, though only a minority; whilst the first reason has been given by its supporters as one which explains the majority of explosions. We will now adduce some of the evidence brought forward to support this latter view.

One of the first attempts to adduce evidence on this subject is by a paper by Mr. Dobson before the British Association in 1855, on the "Relation between Explosions in Coal Mines and Revolving Storms," and the occurrence of several explosions at the time of great storms is cited. Mr. Dobson compared the occurrence of upwards of 500 explosions with the barometric and thermometric readings at the times of the explosions; and concluded from this comparison that explosions take place with a certain amount of periodicity, the explosions being more frequent during the autumn and winter months than during spring and summer. In Belgium it seems to have been proved that the seasons of the year have some connection with the occurrence of explosions. The following table* gives the number of explosions, injuries and deaths, which happened during the different months of the 30 years from 1820 to 1850:—

* Lottner-Serlo. Manual of Mining. Vol. 2, p. 207.

	Explosions.	Injuries.	Deaths.	Total.
March	23	108	164	272
April	28	86	151	237
May	28	84	129	213
Total for spring	79	278	444	722
June	20	56	125	181
July	19	86	26	112
August	20	80	95	175
Total for summer	59	222	246	468
Total for spring and summer	138	500	690	1190
September	14	48	13	61
October	6	22	—	22
November	17	78	49	127
Total for autumn	37	148	62	210
December	18	67	56	123
January	12	34	15	49
February	11	39	13	52
Total for winter	41	140	84	224
Total for autumn and winter	78	288	146	434
Total for 30 years	216	788	836	1624

If these figures are expressed in percentages for the four seasons of the year, we have in:—

	Per cent.	Per cent.	Per cent.	Per cent.
Spring	36·57	35·28	53·11	44·46
Summer	27·31	28·17	29·42	28·82
Autumn	17·13	18·78	7·43	12·93
Winter	18·98	17·77	10·14	13·79

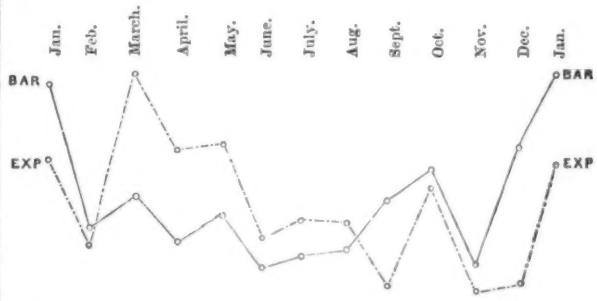
This it will be noticed gives the greatest number of explosions for spring and summer, just an opposite result to that obtained by Mr. Dobson from his observations.

According to Dore, in a paper before the Prussian Academy of Sciences in 1860, the barometric pressure over central and western Europe falls gradually from December to April, reaching its greatest minimum in the latter month; rises from April to September, when it reaches a second maximum (somewhat less than that in December); reaches a second minimum in November (less than that in April); and rises again to a maximum in December. According to a table given it appeared that the greatest number of fatal explosions occurred in the months March, April, and May, when the barometer is lowest; and the least number of fatalities occurred in September and October, which corresponds with a high barometer. This agrees somewhat with the observations made in Belgium. The following table gives the number of explosions which occurred in England in the various months for the years from 1743 to 1849, a total of 107 years:—

March	12 explosions		
April	17 „	}	Spring, 41.
May	12 „		
June	25 „	}	Summer, 61,
July	18 „		
August	18 „		
September	20 „	}	Autumn, 77.
October	29 „		
November	28 „		
December	29 „	}	Winter, 40.
January	7 „		
February	4 „		
Total	219 „		

This gives the greatest number of explosions as occurring in the summer and autumn, and the least in winter and spring; a result agreeing neither with Mr. Dobson's observations nor with those made in Belgium.

The usual mode of exhibiting the connection between the barometric pressure and explosions is to arrange two curves, the ordinates of each representing respectively the number of explosions that have taken place within a given period, and the average barometric pressure. The accompanying represents such a diagram for the explosions which have taken place in the Westphalian mines for the years 1852 to 1869.*



The dotted line gives the curve of the number of explosions, and the black continuous line represents the average barometric pressure during each month. From this diagram it will be noticed that the maximum number of explosions occurred in March, which by no means agrees with the lowest barometric pressure; and, again, a low average barometric pressure over the months June, July, and August by no means agrees with an exceptionally large number of explosions.

Several papers have been brought before the Royal Society in this country by Messrs. Scott and Galloway. In the first of these, published in 1872, the whole number of explosions, extending over 20 years, and numbering 1369, were taken. The results showed that there was little average difference in the different months of the year, the absolute maximum occurring at the end of January, and the minimum at the end of September. Many of the observations which we have cited extend over such long periods that it seems probable that they have been made with reference to the absolute barometric pressure. Messrs. Scott and Galloway's observations have been made more with respect to the amount and rapidity of a

* Lottner Serlo. Manual of Mining. Vol. 2, p. 209.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. VON GRODDECK, Director of the Royal Bergakademie, Clausthal, The Harz North Germany.

fall of the barometer than to the absolute or average barometric pressure.

The following general conclusions have been come to by Messrs. Scott and Galloway on their observations. If the barometric curve, ofter having remained about the same height for several days, descends a ½ in. or 1 in. during the next two or three days, fire-damp may be expected in greater quantity than usual in the cavities of the roof, and in the higher parts of the working both during the descent of the curve and for a day or two after it has reached its lowest limit. Under these circumstances also fire-damp may be expected to appear in some places in which it had not been seen before.

As the curve of temperature rises to 55° and upwards, the ventilating power should be increased at the same time, and the higher the temperature the greater is the necessity for such increase, in order to prevent a possible stagnation of the ventilating current.

If a sudden fall of the barometer takes place (an inch in 24 hours or so), or a further fall after it has been unusually low for a day or two, the utmost care should be exercised to guard against explosions, and more especially if the phenomena be accompanied by a rise of temperature.

The following is a summary of Mr. Galloway's observations for the years 1868 to 1872:—In 1868-70, 550 explosions, 49 per cent. due to barometric fall, 22 per cent. to rise of thermometer, 29 per cent. to neither cause. In 1871, 207 explosions, 55 per cent. due to barometric fall, 19 per cent. to rise of thermometer, and 26 per cent. to neither cause. In 1872, 233 explosions, 58 per cent. due to fall of barometer, 17 per cent. to rise of thermometer, and 25 per cent. to neither.

Similar observations have been made on the advice of Bergrath Andree, at the Colliery Mährisch Ostran, the barometric temperature and pressure being observed both at the surface and underground, and these have been compared with the times of occurrence of explosions, and a similar conclusion to that arrived at by Mr. Galloway is said to have been drawn from the results.

FOREIGN MINES.

RUBY AND DUNDERBERG.—May 19: The upraise above the winze from the 500 ft. level has been connected with the ore body referred to in last report. There is considerable improvement at this point, the ore being about 6 ft. wide, and of better quality. This ore body is the continuation of the small seam reported on May 5 as being 40 ft. above the 500 ft. level, and has developed into what I consider the main body, as it is much larger than the ore followed down in the winze from the 400 to the 500 ft. level, and this work is partially marked out in the maps posted to your address on the 13th. The dotted lines will show where the connection has been made. Instead of sinking the winze below the 500 will now continue the north drift from the west cross-cut on the 500 ft. level to connect with the above ore body, which is pitching north as it goes down the upraise referred to in my last as being 10 ft. above the 300 ft. level, was advanced 20 ft., with little variation. The drift on the 350 ft. level has been continued 10 ft.; have about 6 in. of ore, but are not far enough advanced to intersect the ore body going down from the end of the drift from the upraise. The south drift in the 400 ft. level will be commenced about Monday next if the tenders for running it be approved of. To begin sooner would interfere with our present work. Have shipped about 137 tons of ore during the week, and have 25 men at work, and four tribute workers.

— Telegram dated June 10: The total quantity of ore extracted during the week is 101 tons.

PESTARENA UNITED.—District of Pestarena: In the 110 north there is a small branch of ore in rather uncongenial schist, whilst the south end of the same level is in stiff quartzite with little ore. The 100 north (to be resumed) has no ore at present, but the south end (also to be resumed) shows a decent vein of quartz and pyrites, which will yield 3 tons of 18 dwts. per fathom At the 90 a cross-cut has been started west to intersect or open up the side lodes at that depth. It is in micaceous rock. The 80 end north begins to make ore, and has a good flookan on footwall, worth 4 tons of 10 dwts. per fathom. The 65 north, on No. 5 lode, is without ore at present, being in stiff quartz and schist; but the south end has a good-sized lode, of course quartz. There is a small lode in the 55 end north, No. 1 lode, with good ground alongside, promising improvement. In the 33 north, No. 1 lode, we have a falling off, which appears to be temporary only, the ground being very kindly and lode large. A vein of hard dark pyrites and quartz has come in at the 33 Acquavita, which gives a fair quantity of ore, but it is of low grade. The 33 end, on No. 5 lode, shows a little ore in stiff quartzite. The stopes are yielding fairly, and the machinery continues in good ore.—Val Toppa District: The intermediate level under Zero, on Marmo Rosso lode, does not give ore as rich as usual, but it is extending more over the end. The rock in No. 1 level end, on west lode, is also poorer. At No. 2 level end, on great quartz lode, there is an improvement, the ore rock being more concentrated; whilst the same end on flat lode shows ore in the back which promises to make down. The end south, on middle lode, at intermediate level, under No. 2, is poorer, but it is not likely to continue so; and the end on the same lode, at No. 3 level, shows good quartz coming in, which promises to develope into something of value. The cross-cut at this level has intersected nothing of importance yet. At No. 5 level, on the great quartz lode, patches of quartz appear occasionally without forming any continuous branch. In the stopes there is but little change.

— The gold returns from the mine for the month of May are as follows:—Val Toppa: 195 ozs. 6 dwts. 12 grs., from 446 metric tons of ore; average yield per ton 6 dwts. 2 grs. Pestarena: 356 ozs. 6 dwts., from 322 metric tons of ore; average yield per ton, 1 oz. 2 dwts. 5 grs. Total from both districts 551 ozs. 12 dwts. 12 grs., from 968 metric tons of ore; average yield per ton 11 dwts. 9 grs.

PESTARENA UNITED.—June 2: District Pestarena: Peschiera: No. 1 Lode: In the 110 the end driving north produces 5 tons of ore per fathom; yields 1 oz. 12 dwts. per ton, and is in large dry schist, with felspar, having a good branch of quartz and pyrities, with nickel. The end driving south produces 4 tons per fathom; yields 8 dwts. per ton, has a more regular lode, and looking kindly for further improvement. In the 100 north the intermediate drive from stope produces 3 tons per fathom; yields 3½ dwts. per ton, and continues to yield a little ore, whilst the lode appears likely to increase in size soon. In the 100 south the intermediate drive from stope was suspended during May to hole to level for a pass; driving is now recommenced, in a good sized lode of congenial rock. In the 90 the cross-cut west is passing through hard, massive, micaceous rock. In the 80 the north end driving gives occasional stones of ore only (in a flookan branch) on footwall. The intermediate drive south from rise produces 6 tons per fathom; yields 19 dwts. per ton, and the lode has decreased in size, but it is expected to widen out again shortly. In the 55 the end driving north produces 5 tons per fathom; yields 9 dwts. of gold per ton, and shows kindly schist, with a branch of ore likely to improve. In the 33 the end driving north produces 2½ tons of ore per fathom; yields 1 oz. per ton, and is passing through quartzite rock, impregnated with pyrites throughout.—No. 5 Lode: In the 65 the end driving north yields occasional stones of ore only, but likely to improve. The end driving south produces 10 tons per fathom; yields 14 dwts. per ton, and has a well formed lode, composed of quartz, with a fair admixture of pyrites, and with every appearance of continuance. In the 33 fm. level the end driving north gives occasional stones of ore, but none to value.—Acquavita: In the 33 fm. level the end north on No. 1 lode produces 3 tons per fathom; yields 4 dwts. per ton, and a good quantity of low class ore, which will probably get better as we advance. Fair progress has been made in excavating mountain for new mills; this work will be completed shortly, and the building of walls at once commenced. All the machinery is working well.—District Val Toppa: The end south on Marmo Rosso at Intermediate, under Zero, has strings of poor quartz only, and giving only a little saving work. The end south on west lode, at No. 1 level, contains stones of ore in laminated schist. The main lode appears to be farther east. The end south, on west lode, at No. 2 level, produces 6 tons per fathom, yields 5 dwts. per ton, and the ore is divided into two branches, but the eastern one is poor. The end south on the flat lode, in No. 2 level, contains thin laminations of schist and quartz, with nothing to save. The end south, on the middle lode, intermediate of Nos. 2 and 3, produces 10 tons per fm., yields 3 dwts. per ton, and is passing through a cross-course, and the ore is likely to cut out beyond. The end south, on the middle lode, in No. 3 level, produces 6 tons per fathom, yelds 4 dwts. per ton, and is passing through broken masses of poor quartz rising from the bottom. The cross-cut east from No. 3 level shows loose vertical schist, with a good quantity of water coming through. The end south, on the great quartz lode of No. 5 level, is forming branches of quartz, with a lode-like appearance, more promising than for some time past. Both stamps and mills, with all the other machinery, continue to work satisfactorily.

COPIAPO.—T. B. Hall, April 12: Dulcinea: Fletcher's shaft is set to four men to sink below the 170 fm. level, at $50 per metre; we are now down 12 in. below the 170, the lode presenting favourable prospects, carrying two branches, one about 6 in. wide, producing 1 ton of ore per fathom, and the other, which we have cut within the last few days, about 3 in. wide, consisting of copper, pyrites, and iron. The winze sinking below the 170 north is set to three men, at $35 per metre; the lode is wide, but for the last 3 metres it has been to poor to value. The 170 north is set to two men, at $15 per metre; the lode is very wide, producing some good stones of ore, but not sufficient for valuation. The 170 south is set to three men, at $25 per metre; the lode is 4 ft. wide, yielding 5 tons of ore per fathom. The 160 to drive north, by two men, at $16 per metre; the lode is 4 ft. wide, producing 2 tons of ore per fathom. The 160 south is set to three men, at $26 per metre; the lode is 4 ft. wide, yielding 3 tons of ore per fathom. The 150, north of shaft, is set to two men, at $14 per metre; the lode is 3 ft. wide, yielding 2 tons of ores per fathom. The 150, south of shaft, is set to one man, at $6 per metre; we have cut the lode on this (south) side of the cross-course, which was the cause of the influx of water; the branch at present is about 4 in. wide, and yields 1 ton of ore per fathom. The winze to sink below the 150 south, by three men, at $30 per metre; the lode is 2 ft. wide, and yields 4 tons of ore per fathom. These men have been occupied for the last few days in taking down the back and opening out the level for the placing of a windlass; this will be completed to-day, when we shall resume sinking. The winze sinking from the 150 north has been communicated to the 160; we have also two men opening out the level with the intention of sinking a winze to the 160 in a productive part of the lode. The 140 to drive north of shaft, by one man, at $13 per metre; here we have a branch 6 in. wide, producing 1 ton of ore per fm. The 140 to drive south, by one man, at $10 per metre; about 3 metres north of the present end a cross-course—undoubtedly the same that disarranged the lode at the 150—has here also completely disordered the lode, but I expect within this month we shall again find it, a conclusion drawn from a similar result in this level below. The 130, north of shaft, is set to one man, at $10 per metre; the lode is 2 ft. wide, but poor. In the 80 south we have two men employed in opening out the level for the sake of ventilation, that we may be enabled to resume the drivage. The Chilton set in the Estaca Mine to one man, at $1 per metre. The two men also continue in taking out the ground at surface to the south of Fletcher's shaft, for the proposed new shaft. We have 28 men stoping—10 in the back of the 170 north, 5 in the back of the 160 north, 5 in the back of the 140 north. We have also 18 men on tribute—3 in back of the 50 north, 6 in back of the 80 north, 2 in bottom of the 120 south, 5 in back of the 130 north, and 2 in bottom of the 130 north. Our production of ores for March was 200,000 kilos.—200 tons of 22¾ per cent.—Checo Copper Mine: There is no improvement to notice here. The stopes in back of the 50 have very much deteriorated since my last. The rise in back of the 40 is still producing 1½ ton of ore per fathom. We have stopped the 90, and have put one man to sink in bottom of this level, on which appears to be a shoot of ore of promising appearance. We have also started one man to rise in back of the 80 on a small branch. We are progressing favourably with our 50 cross-cut, and have from time to time intersected several small veins, but without any value. I should certainly judge from appearances that the 40 cross-cut must be approaching a lode, as we are continually crossing small veins of copper, pyrites, and mundic. March production was about 35,000 kilos.—35 tons of 14 per cent.—Checo Silver Mine: This mine is still very poor. We are continuing our explorations on a small scale. Just after my arrival here the man in charge of the mine availed himself of the opportunity to stope away a small arch that was standing near the surface that contained a small branch of good silver ores. We are still taking out a small quantity from various points, but nothing like sufficient to meet our cost. I am extremely sorry to see that copper has also fallen to 65l. The exchange on England has also a drooping tendency—it is now about 32d.

COLOMBIAN HYDRAULIC.—W. S. Melton, April 19: The superintendent has remitted a bar of gold valued at $1003, being gold collected from the old works at Malpaso and Malabar, obtained at a cost of $880·10.—Malpaso: At Malpaso I have determined to make a run of two months, as nothing is required to be done to the cuts, and to make up as much as possible for time lost in bringing in the new opening. We have put in 200 ft. of sluice from the fork in the old sluice down in the direction of the new opening sluice, upon 1 in. grade per foot. As the lower end of the new sluice 40 ft. of sluice have been put in to secure the end upon bed-rock. The new opening sluice was advanced 100 ft. of sluice ahead when we met a very large boulder, 12 ft. high, above the sluice, and as far as we can see 20 ft. wide; the cut now turns round one end of this boulder, and by having continually seven or eight peons picking out large rocks and assisting the dirt to run off, the new sluice takes all the tailings from the mine, and at the same time runs off the dirt from the cut. We shall not be able to put in any more sluice until we have opened the cut wide enough to see if there are any boulders ahead, to change our course accordingly. We can now, with the assistance of the 340 ft. of sluice put in, run off dirt from the mine almost continuously, so that our returns should be larger for the number of hours run than before. The bank now averages 30 ft. in height, without any sand streaks, and the ground is not hard, but firm for piping. The lower gravel prospects about ten good colours to the pan. The man who was sinking the shaft fell sick and left, and we have only been able to sink 3 ft. during the month. The gravel continues the same in richness but very hard.—Malabar: As there is no necessity to work in the cuts, I have resolved to make a two months' run at this mine. We are not ready to move the bulkhead down, and I am working, with one machine only, upon a flat above where we commenced operations. Amalgam can be seen in the sluice: the gold, however, is in very fine grains.

VIRNEBERG COPPER.—R. R. Roskilley, May 26: There is no particular change to notice in any of the bargains underground since my last report, with the exception of the stope in back of the 140, south of shaft, which is much improved for copper ore; and the lode in the stope in back of ditto, north of cross-cut, is also looking much better for that mineral; but as we are not through the ore-bearing part at this point we are unable to report its full width; this we shall cut through, and in my next I hope to be able to report its full size and value. The new stuffing box for the deep adit plunger-lift is to-day brought on the mine, and the shaftmen are employed in fixing same; this we hope to have in order and the water in fork again by to-morrow morning. We are busily engaged in shipping the copper ore at Mühlenweg, and on Saturday the Rheincraft will leave for Rotterdam.

LINARES.—May 26: In the 115, driving east of Warne's engine-shaft, is worth 1 ton per fathom; there is a good lode in the bottom part of the end, but the upper part is poor. The lode in the 135, driving west of Peill's engine-shaft, is large and strong, and worth ½ ton per fm., but is not so productive as it was. The 120, driving in the same direction, is opening up good stoping ground, and valued at 1½ ton per fathom. In the 105, driving west of Peill's engine-shaft, there is a regular and well-defined lode, producing 1½ ton per fathom. The 135, driving east of Peill's engine-shaft, is opening up moderately productive ore ground, and worth 1 ton per fathom. The lode in the 120, driving east of Peill's engine-shaft, is small, consisting of quartz and lead ore, and valued at ½ ton per fathom. In the 105, driving east of San Francisco shaft, the lode is improving, being worth ¾ ton per fathom. Good progress is being made in Warne's engine-shaft sinking below the 115. The No. 232 winze, sinking below the 105, is producing ½ ton per fathom, and is holed to the 120. The lode in the 235 winze, sinking below the 100, has improved during the past fortnight, and is now worth 3 tons per fathom.—Quinientos Mine: The 100, driving east of Taylor's engine-shaft, continues unproductive. The lode in the 90, driving east of Taylor's engine-shaft, is improving in appearance, and yielding good stones of ore. In the 80, driving east of Western Boundary, the ground is hard, and the lode small and unproductive. The lode in the 55, driving east of Western Boundary, is small, consisting of quartz and lead ore, and worth ½ ton per fathom. In Judd's shaft, sinking below the 65, the ground is harder for sinking than it was, and the lode unproductive.

ALAMILLOS.—May 26: In the 115, driving west of Taylor's engine-shaft, a good length of valuable ground is being opened, worth 1 ton per fathom. The ground in the 100, driving in the same direction, is more favourable for working. The lode in the 85, driving west of San Adrianos shaft, is well defined, but it does not contain any lead. In the 60, driving east of San Victor shaft, the lode has improved in value, and has a good appearance; it is now worth 1 ton per fathom. The lode in the 70, driving west of Cristobal's winze, is producing good stones of lead, valued at ½ ton per fathom. The 70 driving east of San Victor shaft, will hole to the last-named level in a few days, when it will be advanced in a good lode, which is in the east end of Cristobal's winze. The 70, driving west of San Victor shaft, consists of a strong promising lode, worth ½ ton per fathom. Good progress is being made in Taylor's engine-shaft, sinking below the 115. In the San Jose shaft, sinking below the 30, a drill-hole has communicated with the 40, and it will soon be completed to that depth. The lode in Canton's winze, sinking below the 50, has fallen off in value, its present worth being 1 ton per fathom, but it continues very wide. Alberta's winze, sinking below the 100, and producing ½ ton per fathom, has communicated to the 115.

BUENA VENTURA.—May 26: The 40, driving east of Cox's shaft, is temporarily suspended, and the men put to enlarge and secure the level driven by the former workers. The lode in the 25, driving west of No. 2 shaft, is small, containing a little ore, but not sufficient to value. In Cox's engine-shaft, sinking below the 40, the ground is hard. No. 2 winze, sinking below the 10, is holed to the 25.

PORTUNA.—May 24: The lode in the 120, driving west of O'Shea's engine-shaft, has improved since our last report, its present value being ½ ton per fm. In the 50, driving west of Abercrombie's shaft, there is a large lode, but without lead enough to value. The lode in the 60, driving in the same direction, is disordered by a small cross-course. The 70, driving west of San Pedro's engine-shaft, consists of a regular and open lode, worth ¼ ton per fathom. In the 80, driving west of San Pedro's engine-shaft, the lode has fallen off in value. In the 90, driving east of San Pedro's engine-shaft, there is a good lode opening out fair stoping ground, producing 1 ton per fathom. The lode in the 70, driving east of San Pedro's engine-shaft, does not seem to improving. In the 120, driving east of O'Shea's engine-shaft, the lode, which is worth 1 ton per fm., is not quite so rich as it has been. The lode in the 100, driving east of Lownde's engine shaft, has a very promising appearance, and is producing 1 ton of ore per fathom. In the 90, driving east of Caro's shaft, the lode is poor and small. Good progress is being made in San Pedro's shaft, sinking below the 80. Arista's winze, sinking below the 30, consists of a large and strong lode, worth ¾ ton per fathom. The lode in Rosa's winze, sinking below the 70, is well defined, and produces ¾ ton per fathom.—Los Salidos: The lode in the 175, driving west of Taylor's engine-chaft, and worth 1 ton per fathom, is looking very promising, and the ground is moderately easy for driving. In the 160, driving west of Taylor's engine-shaft, the lode has improved of late, containing quartz and lead ore, valued at 1 ton per fathom. The lode in the 175, driving east of Taylor's engine-shaft, is well formed, and opening out good stoping ground, worth 1½ ton per fathom. In the 160, driving east of Taylor's engine-shaft, the lode, producing ½ ton per fathom, is small, and the granite hard for driving through. The lode in the 145, driving east of Taylor's engine-shaft, and valued at ½ ton per fathom, is rather small at present. In the 130, driving east of Taylor's engine-shaft, the lode is large and kindly, opening out good tribute ground, worth 1 ton per fathom. The 120, driving west of San Carlos shaft, is opening out splendid stoping ground, producing 3 tons of ore per fathom. The 110, driving east of San Miguel shaft, consists of a poor lode, and of little value. The lode in the 80, driving west of Palgrave's engine-shaft, is small and unproductive. In the 80 cross-cut, north of Palgrave's engine-shaft, nothing has yet been met with. Loam's winze, sinking below the 120, and producing 2 tons per fathom, is down a sufficient depth for the 130.—San Anton Mine: The lode in the 30, driving east of Henty's engine-shaft, and worth 2 tons per fathom, is both large and open, and the ground is easy for driving. In the 30, driving west of Henty's engine-shaft, the lode has improved, and is now looking very promising, being valued at 1 ton per fathom. In Henty's engine-shaft, sinking below the 30, and producing 2 tons of lead ore per fathom, the men are working well, and making good progress in the sinking of the shaft.

SENTEIN.—May 28: The manager reports as follows:—We have broken this week 180 tons of usual quality silver-lead ore and blende by 53 miners. The lode in the winze, sinking below No. 4 level to communicate with St. Barbe, is exceedingly rich in mineral; in fact, in the western end it is all mineral—we are carrying this winze now 6 metres long. There is no change in the value of the lode in either the stopes or ends since last report. St. Barbe level has been extended 14 ft., and No. 4 (St. Eugenie) about 3 ft. We have worked the cable only three days this week, in which time 120 tons of ore was sent down; the other three days we were engaged in drawing up the cables a little more at two sections, as well as the conducting ropes. We have made two new steel buckets and new hangers (iron) complete, and have placed them on the cables between Nos. 4 and 5 stations. We have also re-arranged the shoots at some of the stations, so that I have no donbt we shall bring down 50 tons of ore per day next week, and I expect the week after a great deal more, as by that time the men will be thoroughly accustomed to their work, when I shall pay them so much per ton. In a few days I shall begin putting up sheds over the stations.

PITANGUI GOLD.—Mr. T. S. Treloar (May 2) reports that operations were resumed in the Ouro Podre section on April 19, and the produce obtained from that date to April 30, amounted to 129 ozs. 15 dwts. of gold, or 1124·5 oits.; valuing this at 8s. 6d. per oit., the same would amount to 477l. 18s. 3d., derived from 21 tons of vein stuff, and 30 tons of general mineral, partly treated. This return shows a falling off in comparison with the result of the trial made in December last, but this is accounted for by a lesser portion of the richest part of the vein being broken on this occasion, and by the above produce not representing the whole gold contents of the ore, since parcels of sand that had been pulverised after treatment in the canoas, prove it to be still sufficiently auriferous to pay well for stamping; it is, consequently, stocked for re-treatment. The quantity of general mineral washed had been small, owing to a scarcity of force to work the canoas full time, and there not being as yet a sufficient quantity of water brought on to deal effectually with this class of mineral. Of the quantity treated fully one-half had been caught on the screens, and stocked until the stamps were ready. Mr. Treloar further states:—"As regards the features of the vein little can be added at present to the remarks I made in December. We do not know what its length is or its width, but I may say that, so far as we can judge, it appears to be going into the jacotings, although not so productive at the end of our stope inward as it is at the outer side contiguous to the clay formation. The 15 south and the level to the Bahu section are progressing satisfactorily, and in both good-looking jacotings is coming in; the latter, as for some time past, occasionally yields samples slightly auriferous. The 30 is also progressing well, being now but 3 fms. from the shaft, is in solid ground, and little or no water issuing from the end." Every dispatch was being made with the surface works. Capt. James, with the English miners and smith, had reached the mine.

YORKE PENINSULA.—The directors have received advices from the committee of inspection at Adelaide, with reports from the Kurilla Mine to April 13. The following are extracts from Capt. Anthony's report:—Kurilla Lode: Hall's shaft is now nearly 7 fms. below the 55. The 55 was driven into hard and ungenial rock, and the lode is poor; this drive is not up to the line of ore ground in the 45 (where a good lode is now standing in the bottom of the drive) by about 6 fms. At the 45 the south part of the lode is from 4 in. to 1 ft. wide of 20 per cent. ore, and very regular as to direction and dip. . . . The drive or tunnel at the 55 towards Morphett's lode is now 35 fms. long; judging from the dip of Morphett's lode above the 43, and accepting the same below that point, there should be about 2 fms. more to drive, but yesterday a branch of solid ore 2 in. wide was met with similar to what has before occurred on Morphett's lode on the terminal south wall, so we may expect to intersect the lode at any time. The winze below the 45 is holed to the stope, and stoping resumed. I have also commenced on the second stope in the 55, east of the last-mentioned. Two men are working on tribute in the 35, at 10s. 6d. in 1l. In all 29 men are employed on this lode, inclusive of the six driving towards Morphett's lode.

Morphett's Lode: I have for a time suspended the driving of the 43, west of the engine-shaft, on account of its great distance. There is now plenty of length for sinking the winzes down into the good lode that dips west, and will be available for stoping in the 55 as soon as that level is driven. I have commenced a winze at the 43, east on the cross-course, as the quickest and most inexpensive means of draining this lode by Hall's engine through the tunnel at the 55. Unless unforeseen obstacles arise this lode will be drained and ventilated to the 55 in three months from now, and the 55 driven west from the end of the tunnel to a point immediately under Morphett's engine-shaft. I expect the tunnel will intersect this lode about 10 fms. east of that shaft. . . . Thirty men are employed stoping this lode on tribute and tutwork, and the yield is satisfactory. —The North Branch or New Lode: The lode in the 43, driving west from the cross-course, is worth 3 tons of 20 per cent. ore per fathom, but the ground is costly, still is a paying lode. . . . At the 30, driving west from the eastern cross-course, the lode is worth 3 tons af 20 per cent. ore per fathom. At the 20 up to this time no paying ore has been met with since passing the last bunch 15 fms. west. It is, however, now approaching the line of dip of the ore found at the 10, and the lode is more orey, but not enough to pay. At the 10 a paying lode of green ore is being followed in driving east, and which I hope will continue to the eastern cross-course. The said cross-course lies along our eastern boundary at the 10 fm. level. From the bottom of a trial shaft at this place I have driven about 7 fathoms north on the cross-course, and in doing so intersected three branches of green ore, not rich, but the ground being soft they will attract tributers as soon as the 10 drive is holed to the said drive to ventilate it (say) about 7 fms. to drive. I have also driven nearly 2 fms. south along the cross-course, to cut the south wall. A good branch of green ore has been met with, and ore enough has been broken to pay for driving. Twelve men are employed on this branch. Four driving in the 10 and 20, four stoping, two driving on the cross-course, and two sinking on trial shaft.—Ore Returns: A further quantity of 165 tons of ore had been sold in the colony, leaving on hand at date of report 323 tons of 14 per cent. ore, and 4528 tons of the several kinds of low-class ore.

[For remainder of Foreign Mines see to-day's Journal.]

GOLD MINING IN CALIFORNIA.

THE PLACE WHERE GOLD WAS FIRST DISCOVERED IN CALIFORNIA.

A correspondent of the Napa Register writes from Colima as follows:—The village is almost deserted. Only 400 or 500 people live on an area once inhabited by thousands of eager miners and adventurers. A few substantial stone buildings still remain. Many of the dwelling-houses occupy sites which have been washed out repeatedly as placer diggings and filled in again with soil, and many stand on posts over masses of coarse granite, cobble stones, or small boulders. Where once were rich gardens and fruitful orchards there is now complete desolation. Far different from this was the appearance of the original Santa Coloma in the rich plain of Catalonia, as seen by me a year ago in North-Eastern Spain. The quaint old Spanish town in sight of the snow-clad Pyrences had, probably, seen little change in many centuries except the arrival within the last five years of the iron horse. But the American namesake is not all a scene of desolation. The main street has never been mined, and it is believed that there are fabulous treasures of placer gold concealed in its bed. There are stores and hotels, which show that there is life still left, while on the streets leading up to the hillsides are pretty cottages and gardens.

The river curved around the flat in such a way that a straight race or canal from the dam above, extending to the lower level of the river below, cut off a small segment of the flat. The mill stood over the middle part of the race. On a Saturday evening, early in February, 1848, the newly-dug race received its first influx of water, which was let on in full force in order to sweep out the rubbish accumulated during the building. On the morning of Sunday the water was cut off, and when the channel was dry a little boy, the son of one of Marshall's workmen, descried in the race below the mill the shining piece of gold, about as large as the first joint of the forefinger of a man's hand, which revealed to the world the untold treasures of California, and began the modern era in the search of the noblest metals. The name of the boy was John Wimmer.

The historic piece of gold which he found was brought not long after its discovery to Napa Valley by his father, P. L. Wimmer, or rather, perhaps, by his wife, who was cook for Marshall and his hands at the mill, to whom, according to my informant, it was given. They lived as late as 1868 on or near the Beale Rancho, below St. Helena, in Napa Valley, and afterwards removed to Cambria, near St. Luis Obispo, where they still live. They are said to have refused an offer of $2000 from the California Society of Pioneers for their precious bit of gold.

RICH ORES FOUND IN EL DORADO.—Says the Mountain Democrat:—Last Tuesday a couple of strangers brought 1500 lbs. of quartz to the Griffith Consolidated Mill, near Diamond Springs. In about two hours Griffith had it crushed, and it yielded 31 lbs. of retorted amalgam, worth about $8000! The men said they had only been six days on the ground from which this rock was taken, and had only been two days in taking it out. Young men, or old men either for that matter, had better make a note of this and start on a pocket hunt: $2000 a day to the hand is good wages.

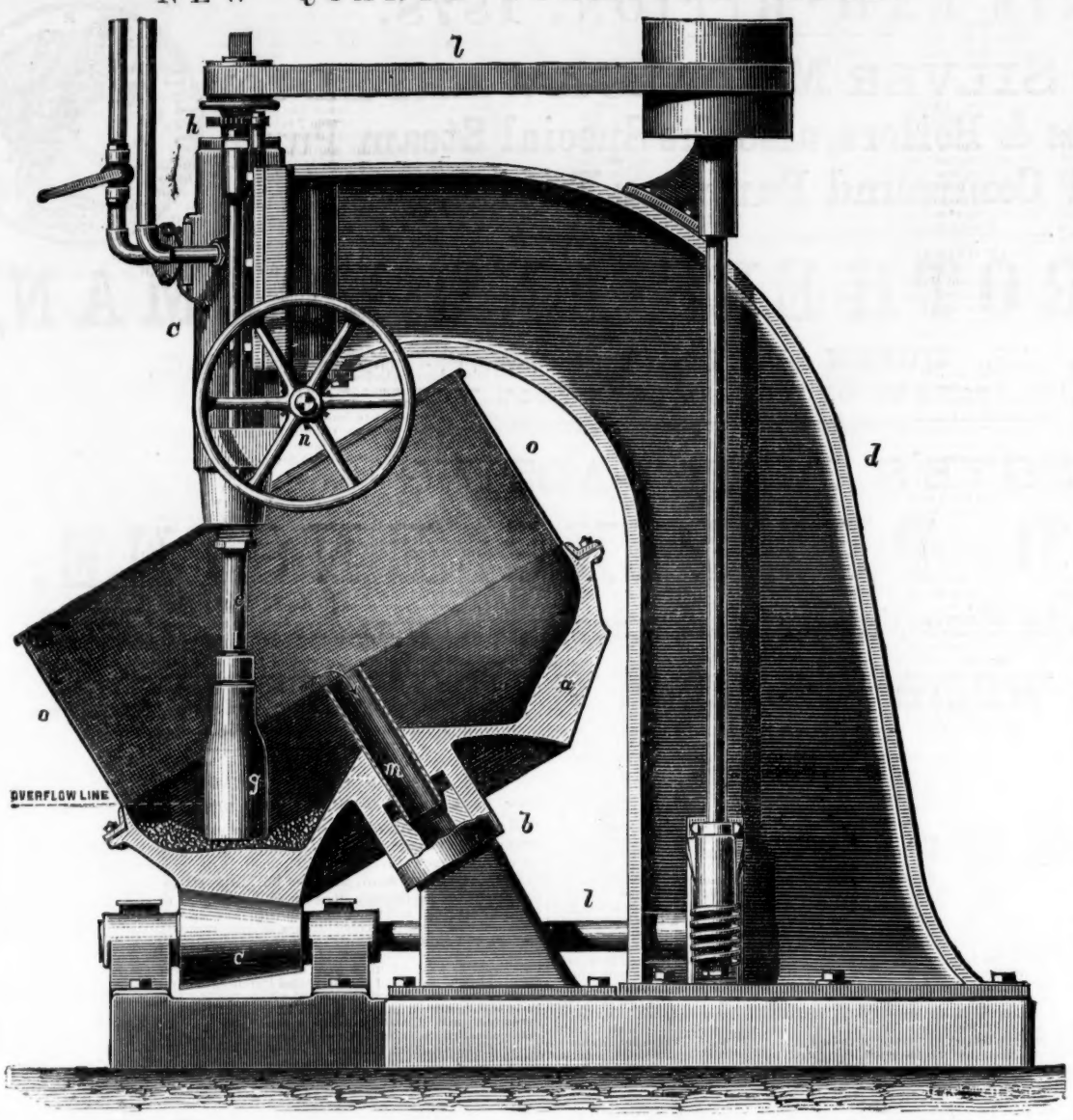
Dr. Gheislin made an exploring trip to the Garden Valley region the fore part of last week, and brought back samples of ore from several ledges in that vicinity. Some of these he had tested, with surprisingly flattering results. One sample, weighing but a small fraction over 1 lb., after being roasted and carefully manipulated, including final treatment with powerful acid, yielded 87½ c. in perfectly pure gold, or at the rate of $1750 per ton! Dr. Gheislin has visited and inspected nearly every prominent mining region in both hemispheres; few men are his equals in theoretical knowledge of mineralogy and metallurgy, and after protracted and careful investigation he is unhesitatingly of opinion that no portion of the world exceeds El Dorado county in respect to the reliable inducements offered for legitimate mining.

THE HORSE-TOWN MINES OF SHASTA.—Probably more attention is being paid just now by Eastern capitalists to gravel mines than to quartz. A large number of mines of that class have been purchased during the last few months, most all being situate in the northern part of California, and large sums of money paid for them. With the improved and newly-invented appliances for working auriferous gravel beds has sprung up the great desire on the part of Eastern men to engage in gravel mining rather than that of quartz or lode veins, for the reason no doubt that the former is more easily understood, less expensive, and bringing quicker returns, while the latter to the novitiate seems almost inexplicable, demands frequent dips into his pockets to meet assessments in order that the quartz lode may be developed so as to be productive.

ANTIMONY MINES OF KERN.—Stephen Boushey was in town on Tuesday; he had just returned from his San Emidio Antimony Mine, which he reported to be in excellent condition. He has bought the rights of the other owners, and now claims to be the sole owner. He has bonded the mine to some Philadelphia capitalists for $300,000, and he left here on Tuesday night for the East to consummate the sale. This mineral has advanced very much in price, and is now quoted at 21 to 22 cents per pound. His mine is said to be very rich, the rock assaying as high as 68 per cent. of the mineral. The new purchasers are said to have abundance of means, and intend to commence work in july, when they will probably have 150 miners at the scene of operations.—*Kern County, California.*

THE BANKER AND TRADESMAN (Boston, Massa.) states that a mine, which has recently been purchased in Denver, Col., for $65,000, was discovered by two children, aged nine and ten years. They were "playing mine" at the time, and had dug down 4 ft. on the Little Chief, near Ruby Hill, drilling and blasting 5 ft. more until a valuable body of ore was brought to light. The father, who owned the claim, gave them $1000 each, and now has sold his interest. The same authority observes that few people realise the growing importance of the mining industries of the West, and the progress they have made during the past 25 or 35 years. To begin with, take the region traversed by the Pacific Railroad, and find out its mineral wealth. As silver mining has grown so extensive in the West, it might be well to take a glimpse of the history of this industry during the past quarter of a century. Twenty-one years ago the total silver product of the United States equalled $200,000 annually. The product in 1878 equalled $46,726,314, of which $41,311,677 was from the States and Territories tributary to the Pacific Railroad. The official statement of the Superintendent of the Mint shows that in 1877 California, Nevada, Utah, Colorado, Oregon, Washington, and Dakotah, produced gold $398,500,000, and silver $36,725,000. In 1878 the same States and Territories produced gold $42,685,596, and silver $41,311,677.

A MERITED COMPLIMENT.—A short time since Mr. J. S. Phillips, M.E., presented to the California Academy of Sciences a copy of the new edition of the "Explorers', Miners', and Metallurgists' Companion." This being a California literary production it was given to a committee for examination. At the last meeting of the Academy Dr. A. B. Stout reported for this committee. He highly extolled the book, speaking of it as in every sense a practical carefully written treatise on the subjects to which it is devoted. He called particular attention to the soundness of the views expressed in the preliminary chapters, with relation to the formation of the earth, and to the careful and lucid manner in which the novel theories advanced by the author were explained. His remarks on the more practical portion of the book relating to assaying, prospecting, testing, &c, were highly complimentary to the author. The work, as a whole, being commended as one of the few complete technical treatises published in this State, and relating specially to the industry which made California what it is, was one which should be in the hands of all miners and metallurgists on the coast. Dr. Stout also highly commended the various apparatus for prospectors' use in assaying, &c., invented by Mr. Phillips, and described in the book, he having examined the appliances, and seen assays made with them.—*Mining Record*, New York, May 1.



NEW QUARTZ STAMPING MILL.

With a view to facilitate the treatment of quartz at mines where from difficulty of access or carriage, or other causes, the ordinary heavy stamps worked by water or steam are not readily available, Mr. JOHN FISHER, of Mincing-lane, London, has invented the new form of mill, represented in the above engraving. He claims to have taken advantage in an inverted sense of the principle successfully used by Nasmyth in his steam-pile driving machinery—that is to say, that whereas in the latter a very heavy ram or driver is used, falling at a slow velocity upon the head of the pile, which is thus rapidly driven into the ground without the usual disintegration of its upper end, which takes place where a relatively light ram falling rapidly is used, Mr. Fisher uses a light stamp-head, impelled with as great velocity as possible upon the quartz to be pulverised, and thus utilises to its fullest extent the very principle of disintegration which is to be avoided in pile-driving machinery.

The apparatus consists of a comparatively light stamp-head, *g*, of proper form attached to the lower end of a piston-rod, *e*, the upper end of which is provided with a piston working in a cylinder, *c*, and made to reciprocate very rapidly up and down in the cylinder by means of steam or compressed air admitted through the supply pipe by any of the now well-known methods, as Mr. Fisher does not propose to confine himself to any particular method, but can adopt, according to circumstances, one or other of the methods by which—either with or without a special distributing valve—the pistons of rock-drills and machinery of the like kind are made to reciprocate in their cylinders, and, of course, he obtains a similar result in the number of blows, from 400 to 1000 or more per minute, which the stamp-head, *g*, strikes. The object of the inventor is to obtain in this way from a small light machine a result equal to that produced by several of the ordinary massive and heavy slow-working stamp-heads. An important adjunct to the stamp head working thus rapidly is the inclined vessel, *a*, which is fitted upon the bearing, *b*, and is arranged so that the stamp, *g*, strikes upon the lower part of its inner surface at *c*, which is supported upon a friction roller, and is made of great strength and solidlty. Of course the part so struck may be in the form of a movable lining, so that it can be renewed readily and at little cost when worn, though this is not shown in the figure. The cylinder, *c*, is shown supported upon a strong iron frame, *d*, which rests upon the same base plate which carries the inclined vessel, *a*, and this frame also has fitted to it an endless screw driving a tangent wheel upon the axis of the friction roller, which carries the weight of the vessel, *a*, under the stamp, *g*, and having at its upper end a drum or pulley. When, therefore, the screw (as shown at *b*) is made to revolve, the vessel *a*, turns slowly upon its axis, and in the figure this revolution is shown effected by a pulley or drum upon a vertical spindle at the upper end of the cylinder, a band connecting it to the pulley upon the endless screw. The pulleys are driven by an internal rifled or twisted bar upon the vertical spindle, which enters a similar nut in the piston (in the way well known to the users of rock drills), and being provided wite a ratchet-wheel and pall secures the partial revolution of the piston with the stamp head during their down stroke, and the partial revolution of the pulleys and endless screw during their up stroke. The vessel, *a*. is thus made to turn slowly upon its axis in a direction opposite to that upon which the stamp turns upon its axis. Other methods than that shown for effecting this necessary revolution of the vessel, *a*, may be used. For instance, a lever may be used, one end of which works between collars upon the piston rod, *e*, whilst its other end drives a ratchet-wheel and pall, which effect the slow revolution of the vessel. The quartz to be crushed having been first reduced to pieces of a manageable size, is fed into the vessel, *a*, whilst the stamp-head is at work, and is reduced by the action of the latter in an incredibly short time to a fine powder, the action being materially assisted, and indeed made certain, by the slow evolution of the vessel, *a*, which ensures the constant movement and change of the fragments under the stamp-head, and the effectual trituration of every part of them. The quartz thus rapidly and effectually treated may be discharged in the usual way, either through wire gauze or perforated plates of the usual kind arranged round the upper part of the vessel, *a*, as shown, or it may pass away, together with the water with which the vessel is supplied, through the centre upon which the vessel turns, which is made hollow for the purpose, and is provided at the upper part with an adjustable pipe shown at *m*. It need scarcely be added that mercury for amalgamation, or other ordinary means for collecting the gold contained in the quartz, may be used as required. The action, compounded of the stamping movement of the stamp-head and the grinding action produced at the moment of the blow by the rotation of the stamp-head in one direction whilst the vessel revolves in the opposite direction, must be singularly effective in completing the pulverisation of the quartz, and can be modified, as well as the speed and force of the blows, by a proper regulation of the pressure of steam or compressed air admitted to the cylinders. The hand wheel shown is used for the purpose of raising or lowering the cylinders according to the character and size of the material undergoing treatment.

Many advantages are claimed for the machine. It can be erected in a few hours with little or no foundations or buildings, and can be transported to any locality, however hilly or inaccessible, with little difficulty, and the absence of steam engines, with their expensive and troublesome concomitants of brasses, pulleys, shafts, and belts, is itself a strong recommendation, especially in countries where the temptation to the natives to make away with the valuable parts of such appliances is great. Instances have been known where the whole of the brasses of a large engine erected at great cost in an almost inaccessible country have been stolen, and when replaced at a great loss of time and money, have again been carried off within a few days No such risk attends the use of the present machine, which has no expensive or valuable fittings, but is fixed at once and finally in a few hours, and the wear and tear of which is very trifling and easily rectified, being almost entirely in the stamp-heads and the revolving pan. The latter is so shaped that it can be cast with the greatest ease, and as it requires no fitting or boring it can be removed or replaced when necessary with as little, or less, trouble as the blocks of ordinary stamps. Finally, it can be driven either direct by steam from a portable boiler, or by compressed air conveyed any reasonable distance from compressors driven by water-wheels, turbines, or wind power. Further results of this machine, which is considered to supply a want much felt by miners, will be looked for with interest, and there is no reason to doubt the realisation of the anticipations formed by the inventor.

MINERS' SAFETY CAGES.

In ordinary cages the rails are fixed to the bottom, to which the latches or bolts which prevent the trams getting off while the cage is in motion are likewise attached. The latches are worked by a lever which is moved right and left horizontally by the foot—locking or unlocking as required. As soon as the cage is wound to the level of the surface it is caught on the keps, and the tram is pushed off. According to the invention of Mr. W. DAVIES, of Quaker's Yard, Merthyr, a lifting bottom is also employed, which consists of a bed-plate, to one end of which are fixed two brackets or projections, which project through the fixed bottom of the cage, the other end of the bed-plate being hinged to the fixed bottom, so that as the cage "sets" the brackets or projections rest on two lever stops or keps, while the cage itself lowers to its landing, taking with it the hinged end of the lifting bottom, so that the lifting or tilting bottom is inclined by the end to which the brackets or projections are attached being raised, while the other end rests on the fixed bottom of the cage. A wooden framing for holding the tram-rails is secured to the bed-plate, to which is also affixed a shaft or axis nearly of the length of such bottom, and which is supported to work in suitable bearings. To this shaft or axis are affixed arms connected by connecting rods with latches or bolts to lock the wheels of the trams fast.

To one of these arms also is fixed a bolt which passes through the fixed bottom of the cage, and at its end is fixed a plate, which strikes the fixed bottom of the cage when the lifting bottom is raised, thereby acting on the shaft or axis to cause the latches or bolts to be drawn within their sockets, releasing the wheels of the tram or trams, which are then free to run off at once by the incline of the lifting bottom. To another of these arms from the shaft or axis of the lifting bottom is fixed another bolt, which ects to give a partial rotation to such shaft or axis as the cage sets on the bottom of the pit, so that in the event of the cage bottom not being required to tilt at the bottom of the pit this other bolt causes the latches to shut back, so that as soon as the cage sets the full tram can be sent on, pushing the empty one from off the cage, as the latches are already back. This other bolt sets upon a stop lever, which can be drawn back as soon as the latches are open, so as to close them again by pressing a foot on one of the handles or arms from the aforesaid shaft or axis.

The stop levers or keps are fixed on other shafts or axes, two for the hinged end and three for the other or lifting end of the lifting bottom. These fangs or stop levers at the hinged end are keyed to one of these other shafts, and the other fangs or stop levers on which rests the brackets or projections of the lifting bottom are also keyed on the other shaft, while another stop lever is loose on this same shaft, and has a pin fixed in it, which works in a slot formed in a short arm, which short arm is keyed on the shaft last referred to. The extra stop lever supports the weight of the cage on the bracket end, and is fixed in the centre between the two other fangs or lever arms at that end; to one end of this last shaft is fixed a hand lever, which works in a quadrant, and as this lever is drawn back it acts upon the fixed stop levers at the rising end of the loose bottom only at first until the aforesaid pin in the extra stop lever is brought home in the slot of the short arm, the lever not being drawn further at the time this fang or stop lever remains under the cage while the other stop levers have been drawn from under the brackets or projections to the rising end of the false bottom, consequently the lifting end drops to its place, and is again ready for loading.

GAS AND PETROLEUM ENGINES.

A new motor which may be worked either with illuminating gas or with fluid distillations of petroleum has been patented by Messrs. WITTIG and HEES, of Hanover. The piston in the pump cylinder draws through a valve a mixture of atmospheric air and gas, and compresses the same up to a certain density, whereupon another valve is opened by the eccentric on a wheel shaft suitably arranged for that purpose; the gas-mixture raises the back valve and passes into the working or driving cylinder, where it is set on fire by a suitable firing arrangement, and serves as the driving power. There is an outlet valve, which on the downstroke of the working piston is open by an eccentric, so that the combustible gases may escape. Both cranks are similarly arranged, and are at the dead point at the same time. The pump piston travels close on to the bottom of the cylinder, whilst the working piston remains a certain distance therefrom. After the pump piston has compressed the mixture to a certain degree, the inlet valve opens, and the mixture passes to and expands in the working cylinder, which shortly before hand is shut off from communication with the exterior by the outlet valve. Thenceforth both pistons work simultaneously, compressing to the bottom of their stroke, and at the end thereof the whole of the mixture is in the free space or chamber of the working cylinder. At this moment the sliding part with its firing arrangement operates the explosion.

When petroleum is used instead of gas the arrangement is slightly varied. Air only is drawn in through the inlet valve, the small conduits for the supply of gas being dispensed with. Simultaneously with the lifting of this valve the small valve which until then had closed the petroleum supply pipe is raised, and a fine jet of this fluid in the form of a shower is drawn in. When the piston descends the small valve closes, and the heat produced by the compression changes the petroleum into vapor, which mixes with the air, and forms an explosive mixture. Thenceforth the process is effected as previously in the case of illuminating gas, the flame of an ordinary petroleum lamp serving as igniting flame. The engine would prove extremely useful where small intermittent power is obtained, and even in districts where ordinary illuminating gas is not obtainable.

GAS OR HYDRO-CARBON ENGINES.

According to the improved arrangement of Mr. W. FOULIS, of Glasgow, the air and gas are drawn in during the up-stroke of the piston through a lift valve so arranged as to admit the gas and air in proper proportions. For this purpose the valve which opens the air passage may be furnished with a second valve which at the same time, and to a proportionate extent, opens the gas way. The compressed mixture of air and gas is admitted to the combustion chamber by a piston valve arranged to admit it for the acting stroke. The exhaust valve is or may be a ball valve seated upon an asbestos seating. Piston valves may be, however, used for admitting gas and air during the inactive stroke and for the exhaust.

The valves may be driven from eccentrics on the driving shaft of the engine, which may be conveniently effected thus:—The rods or straps are coupled to levers, each on one end of tubular shafts, that is to say, three shafts situated concentrically or inside one another, and two of which are tubes, these said concentric shafts being horizontal and situated immediately beneath the valve casing. By means of this concentric and tubular arrangement of these shafts each piston valve is operated independently of and witbout interfering with the operation of the other valves. The improvements consist further in forming the combustion chamber so as to project from the upper part of the cylinders into the interior thereof. The upper side of the piston is protected by fire-clay or other refractory material, and has in it a recess to receive the aforesaid combustion chamber on the up stroke.

The engines may be constructed so as to be reversible. This is effected by having double eccentrics working a second set of valves, which can be brought into operation whilst the others are thrown out of action; these valves opening the ports in the necessary order to admit the compressed air and gases to the cylinders at the time neeessary to give the reverse action, or the same valves may be used and the cylinders provided with a double set of pipes, so that admission from the under side of the pistons of either two cylinders may be opened to the upper side of the other. The eccentrics may have the necessary alteration in their position given to them by any of the known means for effecting this object. In the case of working the engine described by hydro-carbon the liquid may be admitted into the cylinders in small quantities, the down stroke of the pistons in this case compressing only air, and this compressed air on its passage may blow across the mouth of a small pipe from the liquid reservoir, thus producing a spray which the cylinder immediately converts into vapour; or such liquid may be injected into the cylinder or into the compressed air pipe.

PURIFYING FUSED IRON AND STEEL.—For the removal of phosphorus, sulphur, silicon, or other impurites from fused iron and steel Mr. LUDWIG MERLET, of Vienna, proposes to blow into the liquid metal alkalis, or carbonates of alkalis, or dolomite, or caustic lime, each separately, or a mixture of these or some of these materials, or each or mixtures of some or all of them combined with chloride of sodium, or nitrate of soda, sesquioxide or protoxide of iron, or cinders of oxidulated iron, or combined with a mixture of some or all of these materials with or without addition of black wad or pyrolusite in a powdered state. Or, according to another mode of procedure he mixes the liquid metals with alkalis, or carbonates of alkalis, or carbonate of lime, or caustic lime, or dolomite, each separately, or mixtures of these or some of these materials, or with a combination of one or more, or all of these materials with chloride of sodium or with nitrate of soda, or with both, and in combination or not with black wad or pyrolusite, or he mixes up the liquid metal with alkalis or carbonates of alkalis, each separately or a mixture of them, or with a combination of one or more or all of them with chloride of sodium or nitrate of soda, or with both, and in combination or not with black wad or pyrolusite.

ADJUSTABLE DRAWING-BOARD TRESTLE.—To facilitate the adjustment of the drawing-board to the height of the draughtsman, whether sitting or standing, an ingenious arrangement has been designed by Mr. J. H. HARDEN, M.E., of the University of Pennsylvania, and consists in the application of curved and straight slot-links, thumb-screws, and an additional bearing-bar to trestles of the ordinary form. The trestles, which are manufactured in this country by Messrs. John Davis and Son, of Derby, are made single for the architects' or engineers' office, and double for use in schools and colleges. They are highly spoken of by those who have used them in America.

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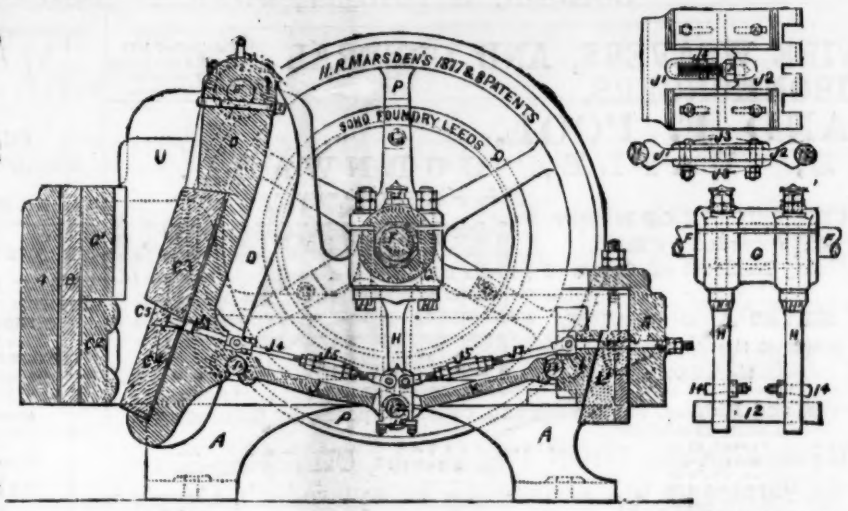

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BLAKE'S STONE BREAKER.—Statement made by the M naging Director of the St. John del Rey Mining Compa Mr. John Hockin, with regard to six months' practi working of Blake's Stone Breaker, affording facility judging of the relative economy of machine and la labour in this kind of work, and also of the cost of gett the Stone Breaker to work in difficult places. The pr paid to Mr. Marsden for the machine referred to by Hockin was £180, and adding to this the cost of engi carriage, and fixing, the aggregate cost to the compa of the Breaker in working order was £500. By this outl the company is enabled to dispense with the labour of people, the value of which is £600 per annum. The c of working the machine could not be more than the wa of about five men (the machine requires but one man feed it, so that the rest would be for engineer, fuel, &c.), and allowing for interest on outlay and for renew when necessary, the saving must be enormous.—*Mini Journal.*

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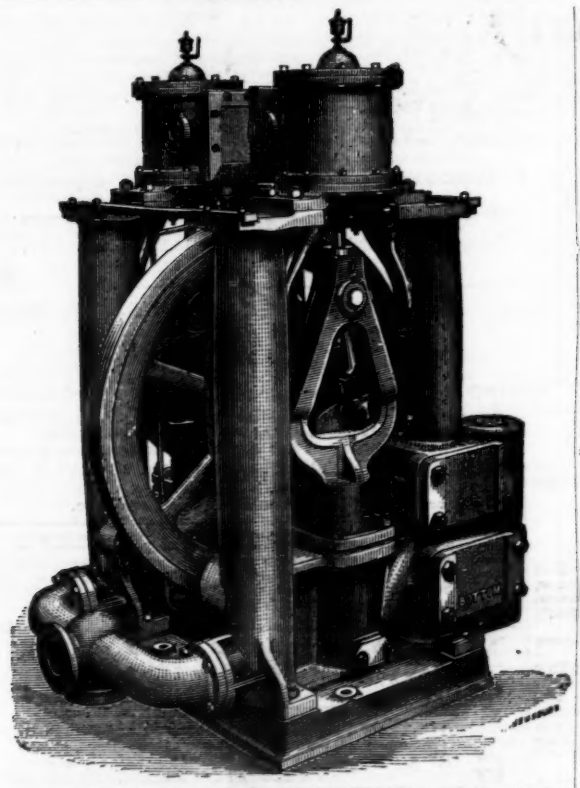

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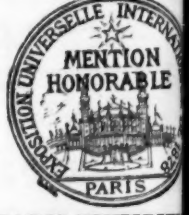

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